SOIL SURVEY OF

Kennebec County Maine

United States Department of Agriculture
Soil Conservation Service
In cooperation with
Maine Agricultural Experiment Station and
Maine Soil and Water Conservation Commission

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all who need the information, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in the period 1947 to 1970. Soil names and descriptions were approved in 1974. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1974. This survey was made cooperatively by the Soil Conservation Service, the Maine Agricultural Experiment Station, and Maine Soil and Water Conservation Commission. It is part of the technical assistance furnished to the Kennebec County Soil and Water Conservation District.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms, woodlands, and wildlife areas; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of Kennebec County are shown on the detailed map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the county in alphabetic order by map symbol and gives the capability classification of each. It also shows the page where each soil is described and the page for the woodland group in which the soil has been placed.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions.

Foresters and others can refer to the section "Woodland" where the soils of the county are grouped according to their suitability for trees.

Wildlife managers and others can find information about soils and wildlife in the section "Wildlife."

Community planners and others can read about soil properties that affect the choice of sites for nonindustrial buildings and for recreation areas in the section "Land Use Planning" and "Recreational Development."

Engineers and builders can find, under "Engineering Uses of the Soils," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices.

Scientists and others can read about the soils in the section "Formation, Morphology, and Classification of the soils."

Newcomers in the area may be especially interested in the section "General Soil Map," where broad patterns of soils are described.

Contents

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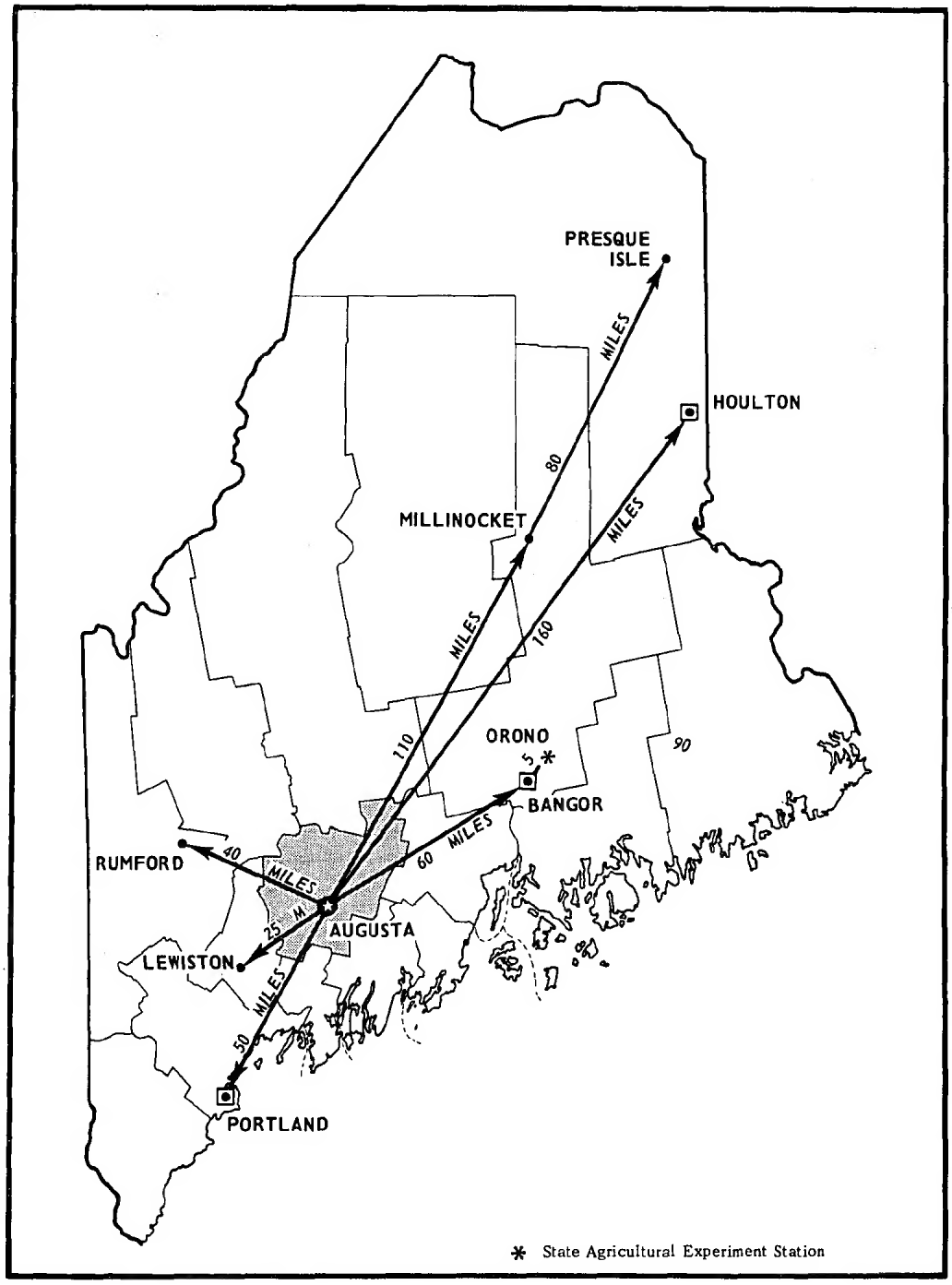

Location of Kennebec County in Maine.

SOIL SURVEY OF KENNEBEC COUNTY, MAINE

By Albert P. Faust and Kenneth J. LaFlamme, Soil Conservation Service

Fieldwork by Albert P. Faust, Oscar L. Lavoie, Roslyn B. Willey, Sheldon Michaels, S. Von Day, and Bryce McEwen

United States Department of Agriculture, Soil Conservation Service, in cooperation with Maine Agricultural Experiment Station and Maine Soil and Water Conservation Commission

KENNEBEC COUNTY is in the southwestern part of central Maine. It covers 865 square miles, or 553,600 acres. There are approximately 82 square miles, or more than 52,000 acres of inland water surface. It is not considered a coastal area, although tidewater reaches Augusta on the Kennebec River, which flows south through the middle of the county. The population was approximately 95,000 in 1970. The major sources of employment are the textile, paper, and shoe manufacturing trades and government and service agencies.

Approximately three-quarters of the land area is woodland, one-fifth is farmland, and the rest is urban developments, bogs, or marshes. The principal farming enterprises are poultry, dairy, apple orchards, and truck crops. Dairy farms are increasing in size but are declining in number, and much of the grain fed to poultry is not grown in this area. Apple orchards are located mainly in the western part of the county. Truck crops are grown for local distribution.

Marine, lacustrine, sand, and gravel terraces occur throughout the county at lower elevations, especially along the Kennebec River. Glacial till ridges also occur throughout the county, but are mainly concentrated in the western and eastern areas. Many of the soils that formed in marine and lacustrine sediments are used for forage crop production and often need additional drainage and measures to control erosion. Many of the glacial till soils have a firm underlying material that limits internal drainage; surface or tile drains help remove excess water. Using the soils for recreational development and for rural homes is a growing trend in the county.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in Kennebec County, where they are located, and how they can be used. The soil scientists went into the county knowing they would likely find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes, the size and speed of streams, the kinds of native plants or crops; the kinds of rock; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* are the categories of soil classification most used in a local survey.

Soils that have a similar profile make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or geographic feature near the place where a soil of that series was first observed and mapped. Hartland and Windsor, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

Soils of one series can differ in texture of the surface layer and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Hinckley gravelly sandy loam, 3 to 8 percent slopes, is one of several phases within the Hinckley series.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries accurately. The soil map in the back of this publication was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show

on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series or of different phases within one series. One such kind of mapping unit is the soil complex. This is shown on the soil map of Kennebec County.

A soil complex consists of areas of two or more soils, so intermingled or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils having similar patterns and relative proportions in all areas. The name of a soil complex consists of the names of the dominant soils, joined by a hyphen. Paxton-Charlton fine sandy loams, 3 to 8 percent slopes, is an example.

In most areas surveyed there are places where the soil material is so rocky, so shallow, or so severely eroded that it cannot be classified by soil series. These places are shown on the soil map by special symbols.

While a soil survey is in progress, samples of soils are taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other areas are assembled. Data on crop yields under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil. Yields under defined management are estimated for all the soils.

But only part of a soil survey is completed when the soils have been named, described, and delineated on the map, and the laboratory data and yield data have been assembled. The mass of detailed information then needs to be organized in such a way to be readily useful to different groups of users, among them farmers, managers of woodland, and engineers.

On the basis of yield and practice tables and other data, the soil scientists set up trial groups. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others, then adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and management.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in the survey area. A soil association is a landscape that has a distinctive pattern of soils in defined proportions. It typically consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in an association can occur in other associations but in different patterns.

A map showing soil associations is useful to people who want to have a general idea of the soils in a survey area, who want to compare different parts of that area, or who want to find suitable sites for a certain kind of land use. Such a map is a useful general guide for broad planning on a watershed, a wooded tract, a wildlife area, or for broad planning of recreation facilities, community developments, and engineering work. It is not a suitable map for detailed planning for management of a farm or field or for selecting a site for a road or building or other structure, because the soils within an association ordinarily vary in slope, depth, stoniness, drainage, and other characteristics that affect their management.

The soil associations in this survey area are described on the pages that follow.

1. *Hollis-Paxton-Charlton-Woodbridge association*

Shallow and deep, somewhat excessively drained to moderately well drained, gently sloping to moderately steep, moderately coarse textured soils; on hills and ridges

This association is on upland ridges throughout the county, generally at elevations of 200 to 700 feet.

This association occupies approximately 53 percent of the county. About 36 percent of this association is Hollis soils, 26 percent is a complex of Paxton-Charlton soils, 26 percent is Woodbridge soils, 8 percent is Paxton soils, and 4 percent is minor soils (fig. 1). The minor soils are mainly Ridgebury, Buxton, Scantic, Togus, and Hinckley soils.

The major soils in this association formed in glacial till. The Hollis soils are shallow and somewhat excessively drained and generally have irregular surfaces. The Paxton and Charlton soils are deep and well drained and have smoother surfaces. In most places, the Paxton soils are intricately intermingled with the Charlton soils. The Woodbridge soils are moderately well drained and are on the lower end of long slopes and in depressions. The poorly drained Ridgebury soil is of minor extent in this association and occupies low, wet depressions.

These soils are mainly in woodland, but many areas are farmed and used for other purposes. The well drained Paxton and Charlton soils are suited to cultivated crops, orchards, and other intensive uses. The Woodbridge soils have some limitations for both farm and nonfarm uses. Many orchards and dairy farms are on this soil association.

2. *Buxton-Scio-Scantic association*

Deep, moderately well drained to poorly drained, nearly level to sloping, medium textured soils; in flat areas and near waterways

This association is generally on sloping banks near waterways and on nearly level to gently sloping areas away from streams, along the Kennebec River, Sebasticook River, and other brooks and streams.

This association makes up approximately 16 percent of the county. It is about 44 percent Buxton soils, 16 percent Scio soils, 10 percent Scantic soils, and 30 percent minor soils (fig. 2). Of minor extent in this association are Suffield, Hartland, Biddeford, Rifle, and Hollis soils.

The major soils in this association formed in marine and lacustrine sediments. Buxton soils are moderately well drained to somewhat poorly drained. In a typical profile they have layers of silt loam over silty clay loam underlain by silty clay material. They are adjacent to the well drained Suffield soils and the poorly drained Scantic soils. The Scio soils are moderately well drained. In a typical profile they have layers of very fine sandy loam over silt loam underlain by alternating layers of

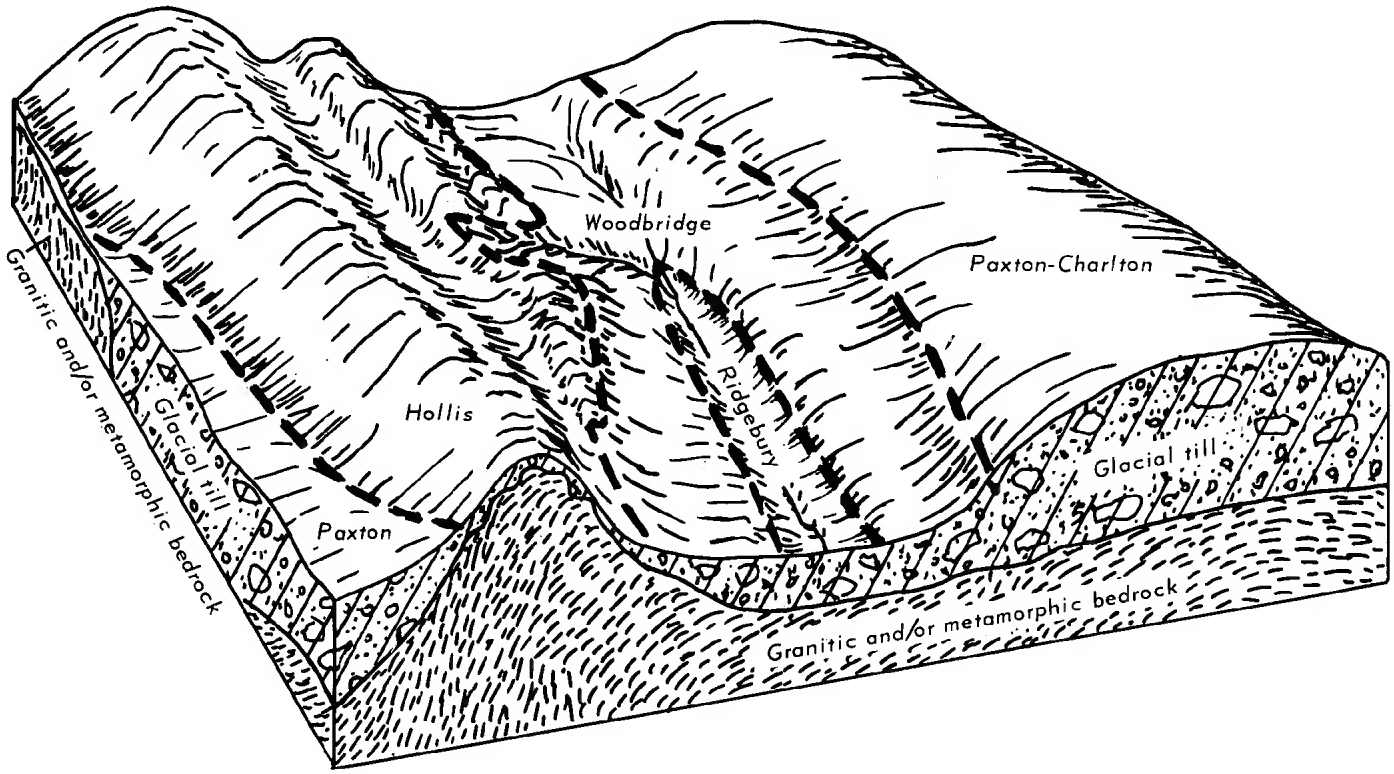

Figure 1.—**Typical pattern of soils in Hollis-Paxton-Charlton-Woodbridge association.**

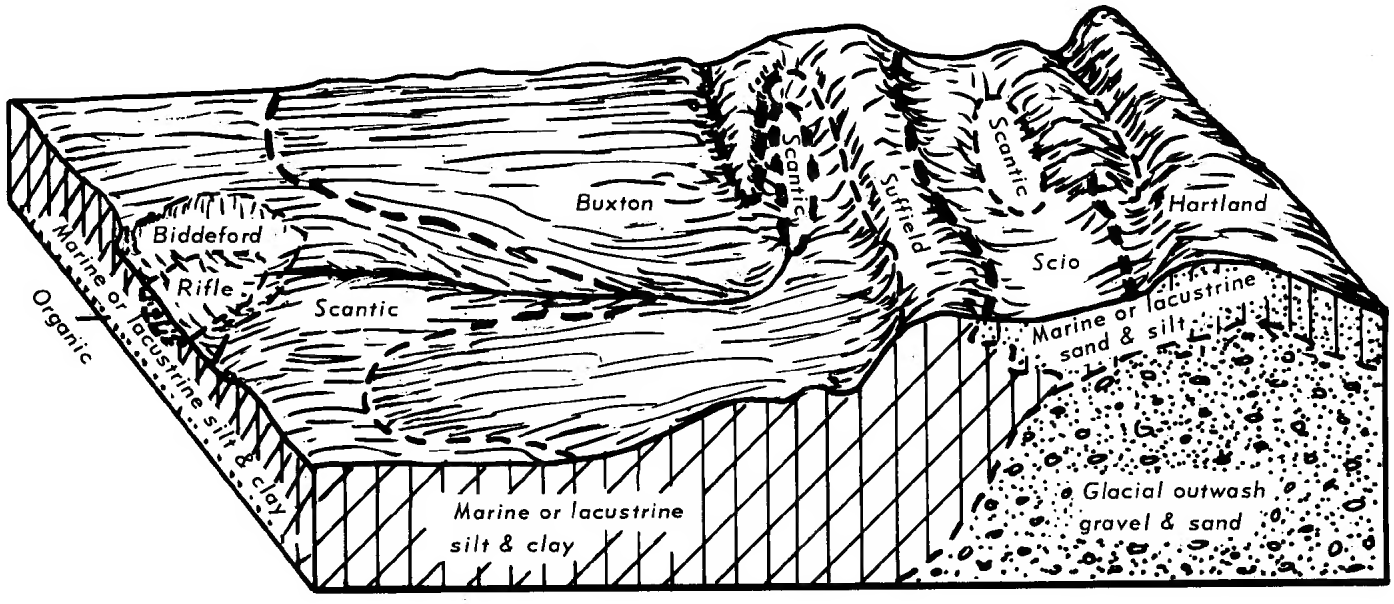

Figure 2.—**Typical pattern of soils in Buxton-Scio-Scantic association.**

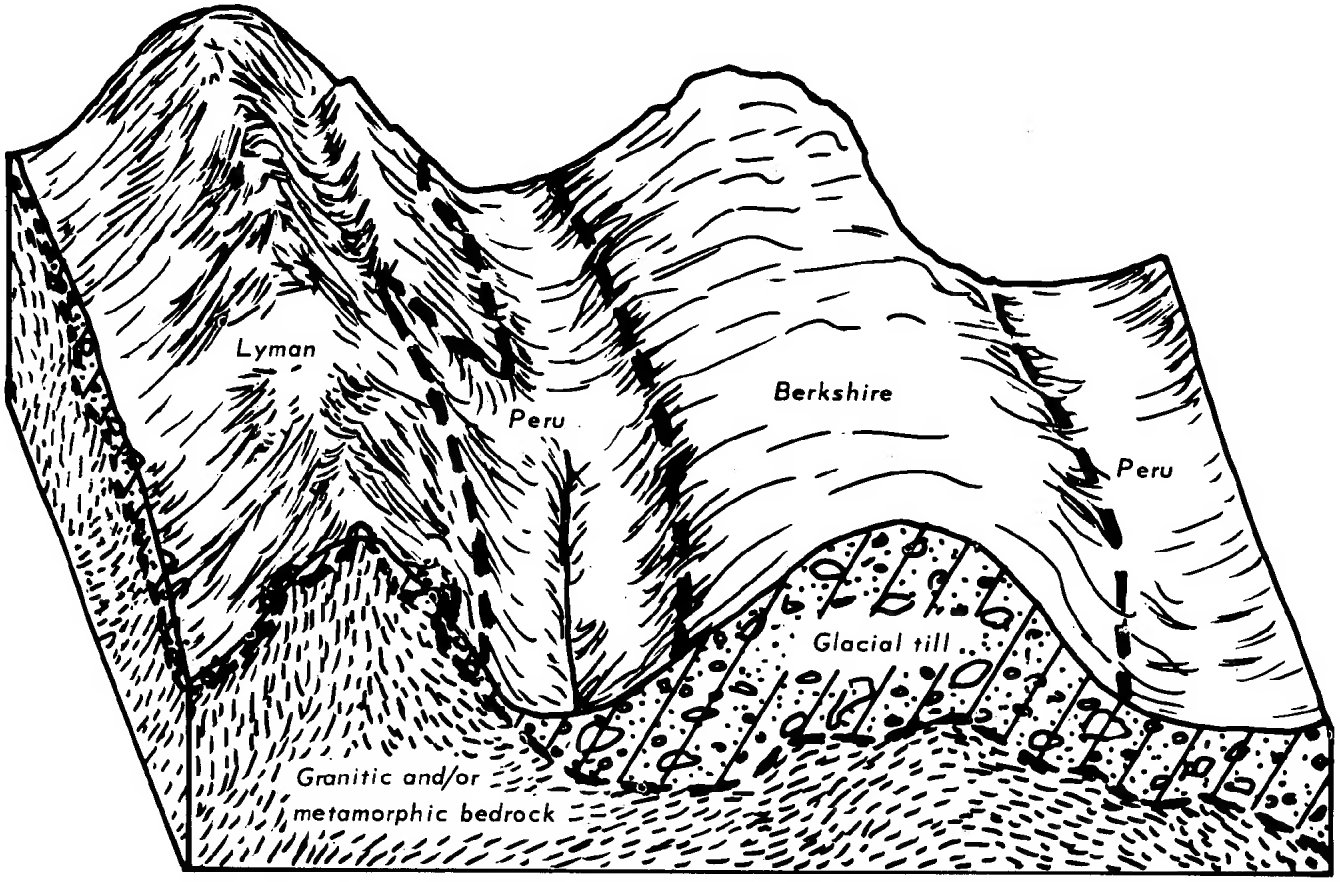

Figure 3.—**Typical pattern of soils in Berkshire-Lyman-Peru association.**

silt loam and very fine sandy loam. They are usually adjacent to well drained Hartland soils. Scantic soils are on flats or in depressions.

The soils in this association are used mainly for hay, pasture, or woodland. Wetness and permeability are the major limitations to use for cultivated crops and septic tank absorption fields. Supplemental drainage and erosion control are the major concerns of management.

3. *Berkshire-Lyman-Peru association*

Deep and shallow, somewhat excessively drained to moderately well drained, gently sloping to moderately steep, medium textured and moderately coarse textured soils; on hills and ridges

This association is on upland ridges mainly in the northwestern section of the county but also in small areas throughout the county. In many places elevation is 1,100 feet or more, including McGaffey Mountain where it is more than 1,200 feet and Round Top, in Rome, where it is 1,130 feet.

This association occupies 6 percent of the county. About 46 percent of this association is Berkshire soils, 28 percent is Lyman soils, 20 percent is Peru soils, and 6 percent is minor soils (fig. 3). The minor soils are mainly Ridgebury, Scantic, Buxton, and Scio soils.

The major soils formed in glacial till. Berkshire soils are deep, well drained, and are on the tops and sides of the upland hills and ridges. The Lyman soils are shallow to bedrock, somewhat excessively drained, and are also on the tops and sides of ridges. Peru soils are deep, moderately well drained, and are in depressions or at the base or on lower parts of side slopes.

The less sloping Berkshire soils, if cleared of surface stones, have few limitations for farming. Most of this association is woodland, however, and is suited to that use.

4. *Hinckley-Windsor-Deerfield association*

Deep, excessively drained and moderately well drained, nearly level to moderately steep, coarse textured and moderately coarse textured soils; mainly on outwash terraces and plains

This association is on eskers in the northern and eastern parts of the county and on the larger outwash terraces and plains throughout the county. Elevation is usually less than 400 feet.

This association occupies approximately 5 percent of the county. About 47 percent of this association is Hinckley soil. About 31 percent is Windsor soil, about 7 percent is Deerfield soil, and about 15 percent is minor soils (fig. 4). The minor soils are mainly in the Hadley, Scarboro, Limerick, Vassalboro, Hollis, and Scio series.

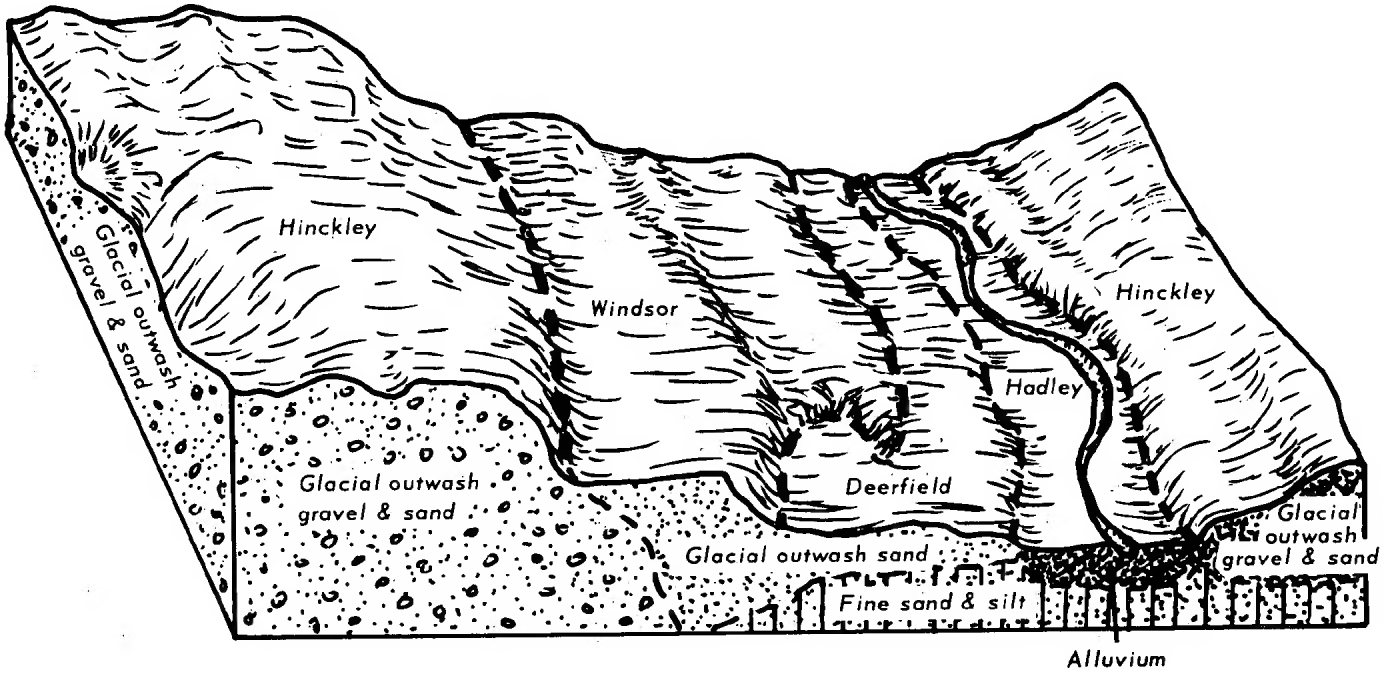

***Figure 4.*—Typical pattern of soils in Hinckley-Windsor-Deerfield association.**

The major soils in this association formed in glacial outwash deposits. Hinckley soils are deep, excessively drained soils that formed in moderately coarse textured material over other coarse textured material. The Windsor soils are deep and excessively drained, and they formed in sandy material. The Deerfield soils are deep and moderately well drained, and they formed in sandy material in depressions within areas of Hinckley soils and Windsor soils. The Hadley soils are on flood plains.

Most of this association is woodland. Many areas are a source of gravel and sand used for construction materials.

5. Scantic-Ridgebury-Buxton association

Deep, poorly drained to moderately well drained, nearly level to sloping, medium textured soils in valleys and moderately coarse textured soils in flat areas or depressions; on upland ridges

This association occurs throughout the county.

This association occupies approximately 16 percent of the county. About 30 percent of this association is Scantic soils, 30 percent is Ridgebury soils, 6 percent is Buxton soils, and 34 percent is minor soils (fig. 5). The minor soils are mainly Biddeford, Limerick, Berkshire, Peru, Hollis, Lyman, Togus, Rifle, Saco, Scarboro, Vassalboro, and Winooski soils.

The major soils in this association formed in marine or lacustrine sediments and in glacial till. Scantic and Ridgebury soils are poorly drained. Scantic soils have a profile of silt loam over silty clay loam that is underlain by silty clay. They generally occupy flat areas where runoff of surface water is slow. Ridgebury soils formed in fine sandy loam glacial till. They generally occur in seepage areas on hillsides or at the base of long slopes and in depressions on upland ridges. Buxton soils are moderately well drained to somewhat poorly drained. They have a profile of silt loam over silty clay loam that is underlain by silty clay. They occupy gently sloping to sloping areas near the Scantic soils.

Some areas of these soils are in grassland, but most of the association is in woodland.

6. Monarda association

Deep, poorly drained, nearly level, medium textured soils; on smooth, low, upland ridges

This association is in the northeast part of the county.

This association occupies approximately 4 percent of the county. It is about 75 percent Monarda soils and 25 percent minor soils. The minor soils are mainly Hollis, Woodbridge, Paxton-Charlton, Scantic, Buxton, and Hinckley soils.

The Monarda soils formed in silt loam glacial till. They are poorly drained. The more sloping areas are subject to seepage during wet periods because a water table is perched over a fragipan.

Most of this association is in woodland. Some areas have been cleared of surface stones and drained for use as hayland and pasture.

Description of the Soils

This section describes each soil series in detail and then, briefly, each mapping unit in that series. Unless stated otherwise, what is stated about the soil series holds true for the mapping units in that series. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the mapping

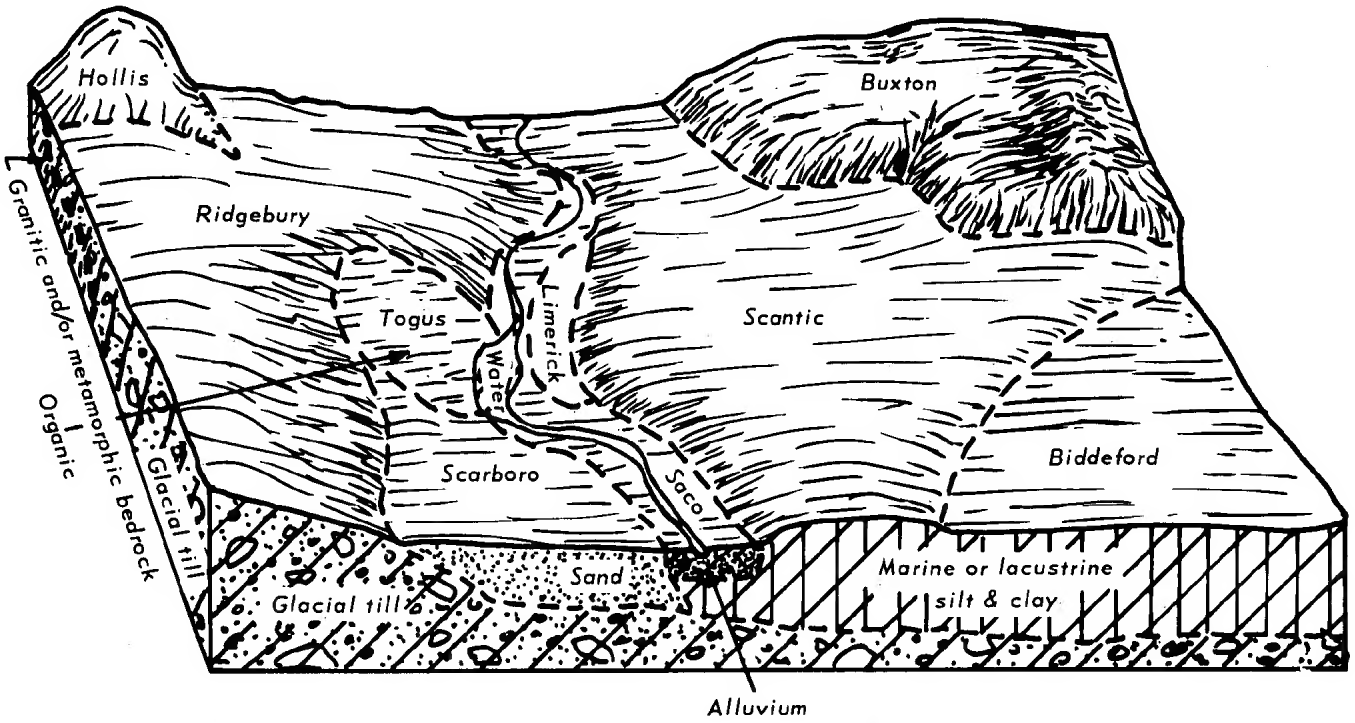

Figure 5.—**Typical pattern of soils in Scantic-Ridgebury-Buxton association.**

unit and the description of the soil series to which it belongs.

An important part of the description of each soil series is the soil profile, that is, the sequence of layers from the surface down to rock or other underlying material. The profile of each series is described twice. The first description is brief and is in terms familiar to a layman. The second is more detailed and is for those who need to make thorough and precise studies of soils. The profile described is representative of mapping units in a series. If the profile of a given mapping unit is different from one described for the series, the differences are stated in describing the mapping unit, or they are differences that are apparent in the name of the mapping unit. Color terms given are for moist soil unless otherwise stated. Permeability is given for the most restrictive layer below the surface layer unless otherwise stated.

Preceding the name of each mapping unit is a symbol that identifies the mapping unit on the detailed soil map. Listed at the end of each description of a mapping unit is the capability subclass and woodland group in which the mapping unit has been placed. The capability subclass and woodland group in which each soil has been placed are listed in the "Guide to Mapping Units" at the back of this survey.

The approximate acreage and proportionate extent of each mapping unit are shown in table 1. Many of the terms used in describing soils can be found in the Glossary, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (*11*).[1]

Berkshire Series

The Berkshire series consists of deep, well drained, gently sloping to moderately steep soils that formed in glacial till. These soils are on the tops and sides of hills and ridges.

In a representative profile, in a forested area, there is a thin layer of leaves and twigs over a surface layer of very dark grayish brown fine sandy loam about 1 inch thick. The subsurface layer is light brownish gray fine sandy loam about 1 inch thick. The subsoil is 22 inches thick. The upper 7 inches is yellowish red, friable fine sandy loam; the next 9 inches is yellowish brown, friable gravelly fine sandy loam; and the lower 6 inches is light olive brown, friable gravelly fine sandy loam. The underlying material extending to a depth of 60 inches is olive gray, friable gravelly sandy loam.

Permeability is moderately rapid to moderate throughout the soil. The available water capacity is high. These soils are naturally stony, but many areas have been cleared for cultivation.

Berkshire soils are used mainly as woodland, but a few areas are used for hay and pasture. They also are used for cultivated crops, apple orchards, and building sites.

[1] Italic numbers in parentheses refer to Literature Cited, p. 85.

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Soil	Acres	Percent	Soil	Acres	Percent
Berkshire fine sandy loam, 3 to 8 percent slopes	344	(1)	Paxton-Charlton fine sandy loams, 8 to 15 percent slopes, eroded	8,219	1.5
Berkshire very stony fine sandy loam, 3 to 8 percent slopes	3,619	0.6	Paxton-Charlton fine sandy loams, 15 to 25 percent slopes, eroded	480	(1)
Berkshire very stony fine sandy loam, 8 to 15 percent slopes	11,507	2.1	Paxton-Charlton very stony fine sandy loams, 3 to 8 percent slopes	9,553	1.7
Berkshire very stony fine sandy loam, 15 to 30 percent slopes	2,308	.4	Paxton-Charlton very stony fine sandy loams, 8 to 15 percent slopes	40,680	7.7
Biddeford mucky peat	8,882	1.6	Paxton-Charlton very stony fine sandy loams, 15 to 30 percent slopes	6,567	1.2
Buxton silt loam, 3 to 8 percent slopes, eroded	32,802	5.9	Peru fine sandy loam, 3 to 8 percent slopes	617	.1
Buxton silt loam, 8 to 15 percent slopes, eroded	12,535	2.3	Peru very stony fine sandy loam, 3 to 8 percent slopes	7,292	1.3
Deerfield loamy fine sand, 0 to 8 percent slopes	2,119	.4	Peru very stony fine sandy loam, 8 to 15 percent slopes	539	.1
Hadley silt loam	283	(1)	Ridgebury fine sandy loam	3,946	.7
Hartland very fine sandy loam, 8 to 15 percent slopes	6,797	1.2	Ridgebury very stony fine sandy loam	28,065	5.1
Hartland very fine sandy loam, 15 to 25 percent slopes	3,480	.6	Rifle mucky peat	3,903	.7
Hinckley gravelly sandy loam, 3 to 8 percent slopes	3,726	.7	Saco soils	587	.1
Hinckley gravelly sandy loam, 8 to 15 percent slopes	7,136	1.3	Scantic silt loam	39,073	7.1
Hinckley gravelly sandy loam, 15 to 30 percent slopes	2,882	.5	Scarboro mucky peat	1,975	.4
Hollis fine sandy loam, 3 to 8 percent slopes	22,045	4.0	Scio very fine sandy loam, 3 to 8 percent slopes	13,705	2.5
Hollis fine sandy loam, 8 to 15 percent slopes	69,546	12.6	Scio very fine sandy loam, 8 to 15 percent slopes, eroded	1,624	.3
Hollis fine sandy loam, 15 to 25 percent slopes	6,573	1.2	Suffield silt loam, 8 to 15 percent slopes, eroded	3,100	.6
Hollis-Rock outcrop complex, 3 to 8 percent slopes	1,941	.3	Suffield silt loam, 15 to 25 percent slopes, eroded	5,341	1.0
Hollis-Rock outcrop complex, 8 to 15 percent slopes	10,559	1.9	Suffield silt loam, 25 to 45 percent slopes, eroded	1,688	.3
Hollis-Rock outcrop complex, 15 to 30 percent slopes	2,244	.4	Togus fibrous peat	6,013	1.1
Limerick silt loam	2,432	.4	Vassalboro fibrous peat	1,517	.3
Lyman loam, 3 to 8 percent slopes	559	.1	Windsor loamy sand, 3 to 8 percent slopes	3,045	.5
Lyman loam, 8 to 15 percent slopes	4,198	.8	Windsor loamy sand, 8 to 15 percent slopes	4,521	.8
Lyman loam, 15 to 25 percent slopes	3,843	.7	Windsor loamy sand, 15 to 30 percent slopes	1,111	.2
Lyman-Rock outcrop complex, 8 to 15 percent slopes	1,787	.3	Winooski silt loam	439	(1)
Monarda silt loam	2,714	.5	Woodbridge fine sandy loam, 3 to 8 percent slopes	21,486	3.9
Monarda very stony silt loam	13,933	2.5	Woodbridge fine sandy loam, 8 to 15 percent slopes	710	.1
Paxton fine sandy loam, 3 to 8 percent slopes	4,074	.7	Woodbridge very stony fine sandy loam, 3 to 8 percent slopes	54,659	9.9
Paxton fine sandy loam, 8 to 15 percent slopes	2,764	.5	Woodbridge very stony fine sandy loam, 8 to 15 percent slopes	2,788	.5
Paxton very stony fine sandy loam, 3 to 8 percent slopes	2,661	.5	Areas represented by conventional map symbols:		
Paxton very stony fine sandy loam, 8 to 15 percent slopes	11,983	2.2	Cut and Fill Land	764	.1
Paxton very stony fine sandy loam, 15 to 25 percent slopes	2,557	.5	Dune land	182	(1)
Paxton-Charlton fine sandy loams, 3 to 8 percent slopes	12,817	2.3	Gravel Pits	1,229	.2
			Made land	532	.1
			Total	553,600	100.0

[1] Less than 0.1 percent.

Representative profile of Berkshire fine sandy loam, in an area of Berkshire very stony fine sandy loam, 3 to 8 percent slopes, in woodland, on the north side of State Route 225, in the town of Rome, 1.5 miles west of the county line:

O1—1 inch to 0; leaves and twigs of maple, beech, birch, and oak trees.

A1—0 to 1 inch; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; friable; many roots; 10 percent coarse fragments; very strongly acid; abrupt smooth boundary.

A2—1 to 2 inches; light brownish gray (10YR 6/2) fine sandy loam; weak fine granular structure; very friable; many roots; 10 percent coarse fragments; very strongly acid; abrupt broken boundary.

B21h—2 to 9 inches; yellowish red (5YR 4/6) fine sandy loam; weak fine granular structure; friable; many roots; a few dark reddish brown (2.5YR 3/4) cemented nodules ¼ inch in diameter; 10 percent coarse fragments; strongly acid; clear irregular boundary.

B22—9 to 18 inches; yellowish brown (10YR 5/8) gravelly fine sandy loam; weak fine gran-

ular structure; friable; many roots; 30 percent coarse fragments; medium acid; clear smooth boundary.

B23—18 to 24 inches; light olive brown (2.5Y 5/4) gravelly fine sandy loam; weak fine granular structure; friable; few roots; 30 percent coarse fragments; medium acid; clear smooth boundary.

C—24 to 60 inches; olive gray (5Y 5/2) gravelly sandy loam; massive; friable; few roots; 30 percent coarse fragments; medium acid.

Depth to bedrock is generally more than 5 feet. The solum is 18 to 35 inches thick and is 5 to 35 percent coarse fragments. It ranges from very strongly acid to medium acid throughout, except where the soil has been limed.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. The A1 horizon is black (N2/0) or it has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. It is up to 4 inches thick. The A2 horizon has hue of 2.5Y or 10YR, value of 4 through 6, and chroma of 1 or 2. The B21h horizon has hue of 2.5Y through 7.5YR, value of 2 through 4, and chroma of 2 through 6. The B22 horizon has hue of 5YR through 10YR, value of 2 through 5, and chroma of 2 through 8. The B23 horizon has hue of 10YR through 2.5Y, value of 3 through 5, and chroma of 2 through 4. The B2 horizon is fine sandy loam, sandy loam, or loam and the gravelly analogs of those textures. The C horizon has hue of 2.5Y or 5Y, value of 3 through 5, and chroma of 2 through 4. It is sandy loam or loam and the gravelly analogs of those textures.

In Kennebec County the B21h and B22 horizons are thicker and the B23 horizon is thinner than described in the range for the series. This does not affect the use and management of the soil.

The well drained Berkshire soils are near the somewhat excessively drained Lyman soils, the moderately well drained Peru soils, and the poorly drained Ridgebury soils. Berkshire soils are similar to the Charlton soils, but the Charlton soils lack the yellowish red B21h horizon.

BhB—Berkshire fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is on tops and sides of hills and ridges. The profile of this soil differs from the one described as representative of the series in that it has been cultivated and the surface layer is a mixture of the original surface and subsurface layers and part of the subsoil. The surface has been cleared of stones.

Included with this soil in mapping are a few areas of Lyman soils or Peru soils. Also included are a few areas of Berkshire soils that have slopes of more than 8 percent or small depressional areas of Ridgebury soils.

This soil is mainly used for hay and pasture. It is well suited to woodland and apple orchards and is also suited to hay, pasture, and all the cultivated crops commonly grown in the area. Because the hazard of erosion is moderate, some measures for controlling erosion are needed if cultivated crops are grown. The limitations to the use of this soil for septic tank absorption fields are slight. Capability subclass IIe; woodland group 3o.

BkB—Berkshire very stony fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is on the tops or sides of hills and ridges. Up to 3 percent of the surface is covered with stones.

Included with this soil in mapping are small areas of Berkshire soils where stones cover more than 3 percent of the surface and a few areas where slopes are more than 8 percent. Also included are small areas of Lyman soils or Peru soils. Near lake shores, a few areas contain soils that have a surface layer and subsoil of very fine sandy loam or silt loam.

This soil is used mainly for woodland and is well suited to this use. It also can be used for permanent bluegrass pasture and apple orchards. It is poorly suited to cultivated crops and hay because of stoniness. The limitation to the use of this soil for septic tank absorption fields is moderate. Capability subclass VIs; woodland group 3o.

BkC—Berkshire very stony fine sandy loam, 8 to 15 percent slopes. This sloping soil is on the sides of hills and ridges. Stones cover as much as 3 percent of the surface.

Included with this soil in mapping are small areas of Berkshire soils where stones cover more than 3 percent of the surface and areas that have slopes of more than 15 percent or less than 8 percent. Also included are small areas of Lyman soils or Peru soils. Included long, narrow, steep slopes or continuous rock outcrops are indicated on the map by escarpment symbols. Near lake shores a few areas of soils have a surface layer and subsoil of very fine sandy loam or silt loam.

This soil is used mainly as woodland and is well suited to this use. It can be used for permanent bluegrass pasture and apple orchards. It is poorly suited to cultivated crops and hay because of stoniness and slope. The limitations to use of this soil for septic tank absorption fields are moderate. Capability subclass VIs; woodland group 3o.

BkD—Berkshire very stony fine sandy loam, 15 to 30 percent slopes. This moderately steep soil is on the sides of hills and ridges, and as much as 3 percent of the surface is covered by stones. The profile of this soil differs from the one described as representative of the series in that it has a thinner surface layer and subsoil.

Included with this soil in mapping are small areas of Berkshire soils that have slopes of less than 15 percent or more than 30 percent. Also included are small areas of Lyman soils and soils in which depth to bedrock is 20 to 40 inches. There are small seepage spots in a few areas.

This soil is used mainly as woodland and is suited to this use. It can be used for permanent bluegrass pasture. It is poorly suited to cultivated crops and hay because of stoniness and slope. The limitations to use of this soil for septic tank absorption fields are severe. Capability subclass VIs; woodland group 3r.

Biddeford Series

The Biddeford series consists of deep, very poorly drained, nearly level soils that formed in marine or lacustrine sediments. These soils are in low areas throughout the county where runoff is very slow or ponded.

In a representative profile, in a forested area, the surface layer is 1 inch of undecomposed leaves and twigs over a layer of very dark brown mucky peat 8

inches thick. The mineral subsurface layer is greenish gray silt loam 5 inches thick that has strong brown to yellowish brown mottles. The subsoil is 19 inches thick. In the upper 7 inches it is greenish gray, firm silty clay loam that has olive mottles. In the lower 12 inches it is greenish gray, firm silty clay that has yellowish brown mottles. The underlying material extending to a depth of 60 inches is greenish gray, firm silty clay that has light olive brown mottles.

The water table remains at or near the surface most of the year. The available water capacity is high, and permeability is slow to very slow. Biddeford soils are used mainly as woodland.

Representative profile of Biddeford mucky peat, in woodland, in the town of Winthrop, about 200 feet from Monmouth town line and 200 feet east of Maine Central Railroad tracks:

O1—9 to 8 inches; undecomposed leaves and twigs.

O2—8 inches to 0; very dark brown (10YR 2/2) mucky peat; weak fine granular structure; friable; many roots; medium acid; clear wavy boundary.

A2g—0 to 5 inches; greenish gray (5GY 5/1) silt loam; few fine prominent mottles of strong brown (7.5YR 5/6) to yellowish brown (10YR 5/6); weak medium subangular blocky structure; firm; few roots; medium acid; clear wavy boundary.

B21g—5 to 12 inches; greenish gray (5GY 5/1) silty clay loam; many medium distinct mottles of olive (5Y 5/6); massive; firm, plastic; neutral; gradual wavy boundary.

B22g—12 to 24 inches; greenish gray (5GY 5/1) silty clay; common medium prominent mottles of yellowish brown (10YR 5/4); massive; firm, plastic; neutral; gradual wavy boundary.

Cg—24 to 60 inches; greenish gray (5BG 5/1) silty clay; many medium prominent mottles of light olive brown (2.5Y 5/4); massive; firm, plastic; neutral.

Depth to bedrock is generally more than 5 feet. Thickness of the solum ranges from 20 to 36 inches. The solum is less than 1 percent coarse fragments by volume. Reaction ranges from medium acid in the A horizon to neutral in the C horizon.

The O horizon has hue of 10YR through 5YR, value of 2, and chroma of 1 or 2. The A2g horizon is neutral or has hue of 5Y, 5BG, or 5GY; value of 3 to 6; and chroma of 2 or less. Prominent mottles that have hue of 5YR to 10YR, value of 3 to 5, and chroma of 4 to 6 generally make up less than 10 percent of the matrix. The Bg horizon has hue of 5Y or 5GY, value of 4 to 6, and chroma of 2 or less. Texture is silty clay, silty clay loam, or clay. Mottles of higher chroma than the matrix range from few to many and distinct to prominent but are less than 40 percent of the matrix. The Cg horizon has hue of 5Y, 5BG, 5G, or 5B; value of 4 or 5; and chroma of 1 or less. Mottles range from distinct to prominent and have hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 6. Texture is silty clay loam, silty clay, or clay.

The very poorly drained Biddeford soils are near the poorly drained Scantic soils, the somewhat excessively drained Hollis and Lyman soils, and the very poorly drained Rifle and Vassalboro soils. The Biddeford soils differ from the Rifle soils and Vassalboro soils in being mineral soils rather than organic soils.

Bo—Biddeford mucky peat. This nearly level soil is in depressional areas and drainageways. Slopes are 0 to 3 percent.

Included with this soil in mapping are small areas of Scantic soils or Buxton soils on small knolls. Also included are small areas of Rifle soils or Vassalboro soils or small areas of soils that have a surface layer of fine sandy loam.

This soil is too wet for most kinds of farming. The limitations to use of this soil for septic tank absorption fields are severe. This soil is not suited to commercial timber production. Capability subclass VIw; woodland group not assigned.

Buxton Series

The Buxton series consists of deep, moderately well drained to somewhat poorly drained, gently sloping to sloping soils that formed in marine or lacustrine sediments. These soils occur throughout the county in valleys, on terraces, and on plains and are most extensive along the Kennebec River and its tributaries.

In a representative profile, in a cultivated area, the surface layer is dark grayish brown silt loam 7 inches thick. The subsoil is 29 inches thick. In sequence from the top it is 5 inches of yellowish brown, friable silt loam; 3 inches of gray, friable silty clay loam; 4 inches of olive gray, firm silty clay loam that has olive and gray mottles; and 17 inches of olive, firm silty clay that has olive brown and gray mottles. The underlying material extending to a depth of 60 inches is olive, firm silty clay with reddish brown, brown to dark brown, and gray mottles.

Permeability is slow to very slow. Available water capacity is high. These soils are free of stones.

Buxton soils are used mainly as woodland, but some areas are used for hay, pasture, and cultivated crops. Because of their location in the county, many urban and industrial areas are on these soils.

Representative profile of Buxton silt loam, 3 to 8 percent slopes, eroded, in the town of Winslow, U.S. Route 201, ½ mile north of Vassalboro town line, east of the highway:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam; moderate fine granular structure; friable; many roots; strongly acid; abrupt smooth boundary.

B2—7 to 12 inches; yellowish brown (10YR 5/4) silt loam; moderate fine granular structure; friable; many roots; strongly acid; abrupt smooth boundary.

A'2—12 to 15 inches; gray (5Y 5/1) silty clay loam; weak fine subangular blocky structure; friable; few roots; strongly acid; abrupt broken boundary.

B'21—15 to 19 inches; olive gray (5Y 5/2) silty clay loam; few fine distinct mottles of olive (5Y 5/6) and fine faint mottles of gray (5Y 5/1); moderate medium sub-

angular blocky structure; firm; medium acid; clear smooth boundary.

B'22—19 to 36 inches; olive (5Y 4/3) silty clay; common fine distinct mottles of olive brown (2.5Y 4/4) and gray (5Y 5/1); moderate to strong very coarse prismatic structure separating to moderate medium and coarse subangular blocky structure; firm; thick continuous olive gray (5Y 5/2) coatings on prism faces and some thin block coatings on secondary ped faces; slightly acid; gradual smooth boundary.

C—36 to 60 inches; olive (5Y 4/3) silty clay; common medium prominent mottles of reddish brown (5YR 4/3) and brown to dark brown (10YR 4/3) and common medium distinct mottles of gray (5Y 5/1); moderate very coarse prismatic structure separating to weak coarse subangular blocky; thin gray (5Y 5/1) coatings on most prism faces; some black coating on secondary ped faces; firm; slightly acid.

Depth to bedrock is generally more than 5 feet. The solum is 28 to 50 inches thick. It is less than 1 percent coarse fragments. Reaction ranges from very strongly acid in the surface layer, except when the soil has been limed, to neutral in the underlying material.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. The B2 horizon has hue of 10 YR or 2.5Y, value of 4 or 5, and chroma of 3 to 6. It is silt loam or silty clay loam. The A'2 horizon has hue of 2.5Y or 5Y, value of 5 or 6, and chroma of 2 or less. The B'2 and C horizons have hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 6. Some mottles that have a chroma of 2 or less are within 24 inches of the surface. Textures are silty clay loam, silty clay, or clay.

The Buxton soils are near the well drained Suffield soils, the poorly drained Scantic soils, and the very poorly drained Biddeford soils. Other soils in the landscape with the Buxton soils are the Scio soils, the Hartland soils, the Hollis soils, and the Lyman soils. The Buxton soils have a finer textured B horizon than the moderately well drained Scio soils and the well drained Hartland soils. Buxton soils are deeper than the Hollis soils and Lyman soils which are shallow to bedrock.

BuB2—Buxton silt loam, 3 to 8 percent slopes, eroded. This gently sloping soil is on terraces adjacent to natural drainageways and on plains. It has the profile described as representative of the series.

Included with this soil in mapping are some areas of Scio soils or Scantic soils and some areas that have a surface layer of sandy loam.

This soil is suited to hay, pasture, cultivated crops, and woodland. Wetness is the major limitation for most uses. When cultivated, the soil is likely to become cloddy when wet and very hard when dry. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIw; woodland group 4o.

BuC2—Buxton silt loam, 8 to 15 percent slopes, eroded. This sloping soil is on rolling topography adjacent to natural drainageways. The profile of this soil differs from the one described as representative of the series in that the upper layers are thinner and lighter colored.

Included with this soil in mapping are small areas of Scio soils, Hartland soils, or Suffield soils. Scantic soils are in small depressions and drainageways. Areas where slopes are more than 15 percent or where the surface layer is thicker as a result of deposition from adjacent slopes are also included.

Most areas of this soil are in woodland, but many areas have been used at one time for hay, pasture, or cultivated crops. Wetness and a severe hazard of erosion are the main limitations to the use of this soil. When cultivated it is likely to become cloddy when wet and very hard when dry. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIIew; woodland group 4r.

Charlton Series

The Charlton series consists of deep, well drained, gently sloping to moderately steep soils that formed in glacial till. These soils are on the tops and sides of hills and ridges throughout the county.

In a representative profile, in a cultivated area, the surface area is brown to dark brown fine sandy loam 8 inches thick. The subsoil is 22 inches thick. The upper 7 inches is yellowish brown, friable fine sandy loam; the next 7 inches is light olive brown, friable gravelly fine sandy loam; and the lower 8 inches is dark grayish brown, friable gravelly fine sandy loam. The underlying material extending to a depth of 60 inches is olive gray, very friable gravelly fine sandy loam.

Permeability is moderately rapid to moderate. Available water capacity is moderate. These soils are naturally stony, but some areas have been cleared for cultivation.

Charlton soils are used mainly as woodland or for hay and pasture. Some areas are used for cultivated crops, apple orchards, and building sites.

Representative profile of Charlton fine sandy loam, in an area of Paxton-Charlton fine sandy loams, 3 to 8 percent slopes, in a cultivated field in the town of Readfield, north of old State Route 17, on the east side of Thunder Castle Road:

Ap—0 to 8 inches; brown to dark brown (10YR 4/3) fine sandy loam; moderate medium granular structure; friable; many roots; 5 percent coarse fragments; medium acid; abrupt smooth boundary.

B21—8 to 15 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine granular structure; friable; many roots; 15 percent coarse fragments; strongly acid; gradual wavy boundary.

B22—15 to 22 inches; light olive brown (2.5Y 5/4) gravelly fine sandy loam; weak fine granular structure; friable; many roots; 20 percent coarse fragments; strongly acid; clear wavy boundary.

B23—22 to 30 inches; dark grayish brown (2.5Y 4/2) gravelly fine sandy loam; weak medium platy structure; friable; many roots; 25 percent coarse fragments; thin

red (2.5YR 5/6) stains in rings around stones; very strongly acid; clear wavy boundary.

C—30 to 60 inches; olive gray (5Y 5/2) gravelly fine sandy loam; massive; very friable; few roots; 30 percent coarse fragments; strongly acid.

Depth to bedrock is generally more than 5 feet. The solum is 20 to 36 inches thick. The solum is 5 to 35 percent coarse fragments and stones. It ranges from medium acid through very strongly acid except where it has been limed.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. The A1 horizon, if it occurs, has hue of 10YR and value and chroma of 2 or 3. The upper part of the B horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6. The lower part of the B horizon has hue of 10YR through 5Y, values of 4 to 6, and chroma of 2 to 6. The B horizon ranges from sandy loam to loam and the gravelly analogs of those textures. The C horizon has hue of 5Y, value of 4 or 5, and chroma of 2 or 3. It is fine sandy loam or sandy loam and their gravelly analogs.

The well drained Charlton soils are near the somewhat excessively drained Hollis soils, the moderately well drained Woodbridge soils, and the poorly drained Ridgebury soils and are intricately intermingled with the Paxton soils. Charlton soils are similar to Paxton soils, but the Paxton soils have a fragipan. They are also similar to the Berkshire soils, but lack the yellowish red B21h horizon.

Charlton soils are mapped only with Paxton soils.

Deerfield Series

The Deerfield series consists of deep, moderately well drained, nearly level to gently sloping soils that formed in sandy deposits. The soils occur in depressions on outwash terraces and plains throughout the survey area.

In a representative profile, in a formerly cultivated area that has reverted to forest, the soil has a surface layer of dark reddish brown decomposed organic material 1 inch thick over very dark grayish brown loamy fine sand 7 inches thick. The subsurface layer is light gray to gray loamy fine sand 1 inch thick. The subsoil is 18 inches thick. The upper 2 inches is brown to dark brown, friable loamy fine sand; the next 5 inches is yellowish brown, friable loamy fine sand; and the lower 11 inches is olive brown, loose loamy sand that has olive, yellowish brown, and brown to dark brown mottles. The underlying material extending to a depth of 60 inches is olive gray, loose loamy sand that has gray and olive mottles.

Permeability is very rapid to rapid. The available water capacity is low.

Deerfield soils are used mainly as woodland, and occasionally for hay, pasture, and cultivated crops.

Representative profile of Deerfield loamy fine sand, 0 to 8 percent slopes, in a wooded area in the town of Wayne, on north side of State Route 219, ½ mile east of the Androscoggin County line, 200 feet from the highway:

O2—1 inch to 0; dark reddish brown (5YR 3/3) organic material; many fine roots; weak medium granular structure; friable; abrupt smooth boundary.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loamy fine sand; weak fine granular structure; friable; many roots; strongly acid; clear smooth boundary.

A2—7 to 8 inches; light gray to gray (10YR 6/1) loamy fine sand; weak fine granular structure; friable; many fine roots; strongly acid; abrupt broken boundary.

B21h—8 to 10 inches; brown to dark brown (7.5YR 4/4) loamy fine sand; weak fine granular structure; friable; many fine roots; strongly acid; abrupt broken boundary.

B22—10 to 15 inches; yellowish brown (10YR 5/6) loamy fine sand; single grain; friable; few roots; strongly acid; gradual smooth boundary.

B3—15 to 26 inches; olive brown (2.5Y 4/4) loamy sand; common medium distinct mottles of olive (5Y 5/3), yellowish brown (10YR 5/4), and brown to dark brown (7.5YR 4/4); single grained; loose; strongly acid; abrupt smooth boundary.

C—26 to 60 inches; olive gray (5Y 5/2) loamy sand; few fine faint mottles of gray (5Y 5/1) and olive (5Y 5/3); single grained; loose; strongly acid.

Depth to bedrock is generally more than 5 feet. The solum is 15 to 30 inches thick. The soil ranges from very strongly acid through medium acid throughout except where limed. It is as much as 15 percent coarse fragments, generally gravel. Texture to a depth of 10 inches ranges from fine sandy loam to sand. Below a depth of 10 inches it is loamy sand through coarse sand.

The Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 3. Unplowed soils have O1 and O2 horizons and a thin black (10YR 2/1) A1 horizon underlain by a thin A2 horizon. The A2 horizon has hue of 5YR through 10YR, value of 4 through 7, and chroma of 1 or 2. The B21 horizon has hue of 10YR or 7.5YR, value of 3 through 5, and chroma of 2 through 6. The B22 horizon has hue of 10YR, value of 4 or 5, and chroma of 4 or 6. The B3 horizon has hue of 2.5Y, value of 4 or 5, and chroma of 4 or 6. Below a depth of 15 inches the B horizon is mottled. The C horizon has hue of 5Y or 2.5Y, value of 4 through 6, and chroma of 1 through 3. The C horizon is mottled or unmottled.

The moderately well drained Deerfield soils are near the excessively drained Windsor soils and Hinckley soils. The Deerfield soils are also associated on the landscape with the very poorly drained Scarboro soils.

DeB—Deerfield loamy fine sand, 0 to 8 percent slopes. This nearly level to gently sloping soil is on outwash terraces and plains throughout the county.

Included with this soil in mapping are a few areas of Hinckley soils or Windsor soils in narrow bands along the edges of the areas and on knolls. Included small depressions occupied by Scarboro soils or Scantic soils are indicated on the soil map by wet spot symbols. In

some areas the subsoil and underlying material have thin layers of fine gravel or gravelly sand.

This soil can be used for hay, pasture, cultivated crops, or as woodland. Wetness in spring and during rainy seasons is a management problem, but drainage will improve the suitability of this soil for cultivated crops. The limitations to use of this soil for septic tank absorption fields are severe. Capability subclass IIIw; woodland group 4o.

Hadley Series

The Hadley series consists of deep, well drained, nearly level soils that formed in alluvium. These soils are on flood plains throughout the county.

In a representative profile, in a cultivated area, the surface layer is very dark grayish brown silt loam 10 inches thick. The underlying material is light olive brown, friable very fine sandy loam in the upper 18 inches; very dark grayish brown, friable silt loam in the next 6 inches; yellowish brown, friable silt loam in the next 18 inches; and olive brown, friable silt loam that has gray, brown, and dark brown mottles to a depth of 60 inches.

Permeability is moderate, and the available water capacity is high. Flooding is common.

Hadley soils are used mainly for hay, pasture, and cultivated crops.

Representative profile of Hadley silt loam in a cultivated area in the town of Pittston, near the Kennebec River, 300 feet north of the Lincoln County line:

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; common roots; neutral; abrupt smooth boundary.

C1—10 to 28 inches; light olive brown (2.5Y 5/4) very fine sandy loam; massive; friable; very few roots; slightly acid; abrupt smooth boundary.

C2—28 to 34 inches; very dark grayish brown (10YR 3/2) silt loam; massive; friable; slightly acid; abrupt smooth boundary.

C3—34 to 52 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; slightly acid; abrupt smooth boundary.

C4—52 to 60 inches; olive brown (2.5Y 4/4) silt loam; common coarse distinct circular mottles of gray (5Y 5/1) surrounded by brown to dark brown (7.5YR 4/4) rings; massive; friable; slightly acid.

Depth to bedrock is generally more than 5 feet. Reaction ranges from strongly acid to slightly acid throughout, except where the soil has been limed.

The Ap horizon has a hue of 10YR through 5Y, value of 3 or 4, and chroma of 2 through 4. The C horizon has a hue of 10YR through 5Y, value of 3 through 5, and chroma of 2 through 4. The C horizon, to a depth of 40 inches, is dominantly silt loam or very fine sandy loam, but ranges from silt loam through loamy very fine sand. Below a depth of 40 inches, it ranges from silt loam to very fine sand or coarser sand.

The well drained Hadley soils are near the moderately well drained Winooski soils, the poorly drained Limerick soils, and the very poorly drained Saco soils.

Ha—Hadley silt loam. This is a nearly level soil on flood plains along the larger streams and rivers throughout the county. Slopes are mainly 0 to 3 percent.

Included with this unit in mapping are terrace margin escarpments. Small areas of included Limerick soils, Saco soils, or Winooski soils are indicated on the soil map by wet spot symbols. Also included in mapping are small areas that have a surface layer of fine sandy loam.

This soil is well suited to cultivated crops, pasture, hay, and woodland. Crops on this soil respond well to application of lime and fertilizer. The use of this soil for septic tank absorption fields is severely limited by flooding. Capability class I; woodland group 3o.

Hartland Series

The Hartland series consists of deep, well drained, sloping to moderately steep soils that formed in lacustrine or marine sediments that have alternating layers of very fine sandy loam, very fine sand, and silt loam. These soils are in the wide valleys of the county.

In a representative profile, in a cultivated area, the surface layer is dark brown very fine sandy loam 7 inches thick. The subsoil is 21 inches thick. The upper 2 inches is strong brown, friable very fine sandy loam; the next 6 inches is light olive brown, friable very fine sandy loam; and the lower 13 inches is dark grayish brown, friable silt loam. The underlying material, extending to a depth of 60 inches, is alternating layers of olive very fine sandy loam, pale olive very fine sand, and olive gray silt loam.

Permeability is moderate to moderately slow. Available water capacity is high.

Hartland soils are used mainly as woodland, but a few areas are used for hay, pasture, and cultivated crops.

Representative profile of Hartland very fine sandy loam, 8 to 15 percent slopes, in a field in the town of Belgrade, on north side of road from Belgrade Depot to Old South Church, 1,000 feet west of railroad bridge overpass:

Ap—0 to 7 inches; dark brown (10YR 3/3) very fine sandy loam; moderate fine and medium granular structure; very friable; many roots; strongly acid; clear wavy boundary.

B21—7 to 9 inches; strong brown (7.5YR 5/6) very fine sandy loam; moderate fine granular structure; friable; many roots; medium acid; clear broken boundary.

B22—9 to 15 inches; light olive brown (2.5Y 5/4) very fine sandy loam; moderate medium granular structure; friable; common roots; medium acid; abrupt smooth boundary.

IIB23—15 to 28 inches; dark grayish brown (2.5Y 4/2) silt loam; strong fine and medium subangular blocky structure; friable; common roots; medium acid; abrupt smooth boundary.

IIIC—28 to 60 inches; olive (5Y 5/3) very fine sandy loam, pale olive (5Y 6/3) very fine sand, and olive gray (5Y 4/2) silt loam

in alternating layers 2 to 6 inches thick; weak very coarse prismatic structure parting to weak thick platy; friable; slightly acid.

Depth to bedrock is generally more than 5 feet. The solum is 14 to 30 inches thick. There are generally no stones or coarse fragments in these soils, but sand and gravel are commonly below a depth of 60 inches. Reaction ranges from strongly acid to neutral throughout the profile. Gravel pits in Pittston, Waterville, and other towns along the Kennebec River are commonly located where Hartland soils overlie the sand and gravel deposits.

The Ap or A1 horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Some areas that have never been plowed have an A2 horizon 1 to 3 inches thick that has a hue of 10YR or 2.5Y, value of 5, and chroma of 1 or 2. The upper part of the B horizon has hue of 7.5YR through 5Y, value of 4 or 5, and chroma of 4 or 6. The lower part of the B horizon has hue of 10YR through 5Y, value of 4 through 7, and chroma of 2 through 8. The C horizon has hue of 10YR through 5Y, value of 3 through 6, and chroma of 2 through 6. The B and C horizons are commonly very fine sandy loam, silt loam, or loamy very fine sand. Some profiles have layers of very fine sand.

In Kennebec County the Hartland soils have a B21 horizon that is slightly thinner than is described within the range for the Hartland series. This difference does not affect the use or management of the soils.

The well drained Hartland soils are near the moderately well drained Scio soils, the moderately well drained to somewhat poorly drained Buxton soils, and the excessively drained Hinckley soils and Windsor soils. They are similar to the Suffield soils in drainage, but overlie coarser textured material.

HfC—Hartland very fine sandy loam, 8 to 15 percent slopes. This sloping soil is along the sides of drainageways. It has the profile described as representative of the series.

Included with this soil in mapping are a few small areas of Scio soils, Buxton soils, Suffield soils, or Windsor soils, and a few small wet areas or a few areas that have slopes of more than 15 percent. In areas near the Windsor soils, soils that have a surface layer of sandy loam or fine sandy loam are included.

This soil is suited to hay, pasture, woodland, and cultivated crops. If the soil is cultivated, erosion is a hazard and measures for controlling erosion are needed. The limitations to the use of this soil for septic tank absorption fields are moderate. Capability subclass IIIe; woodland group 3r.

HfD—Hartland very fine sandy loam, 15 to 25 percent slopes. This moderately steep soil is on sides of drainageways. The profile of this soil differs from the one described as representative of the series in that the subsoil is thinner.

Included with this soil in mapping are a few areas of Suffield soils or Windsor soils. In areas near the Windsor soils, soils that have a surface layer of sandy loam or fine sandy loam are included. Also, a few areas that have slopes of less than 15 percent or more than 25 percent are included.

This soil is used mainly as woodland and pasture, but it can be used for hay. If the soil is cultivated, erosion is a hazard and some measures for controlling erosion are needed. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IVe; woodland group 3r.

Hinckley Series

The Hinckley series consists of deep, excessively drained, gently sloping to moderately steep soils that formed in glacial outwash deposits. These soils are on terraces, plains, and eskers throughout the county.

In a representative profile, in a forested area, the surface layer is a thin layer of leaves, pine needles, and twigs over 2 inches of very dark grayish brown gravelly sandy loam. The subsoil is 28 inches thick. The upper 8 inches is yellowish brown, very friable gravelly sandy loam; the middle 14 inches is yellowish brown, very friable gravelly loamy sand; and the lower 6 inches is yellowish brown, loose gravelly loamy coarse sand. The underlying material extending to a depth of 60 inches is light yellowish brown, loose very gravelly coarse sand.

Permeability is very rapid to rapid. Available water capacity is low.

Hinckley soils are used mainly as woodland, but the less sloping areas are used for hay and pasture. These soils are a major source of sand and gravel. Commercially operated pits are located on these soils throughout the county.

Representative profile of Hinckley gravelly sandy loam, 8 to 15 percent slopes, in a woodland, in the town of Monmouth, 100 feet south of a gravel road, ¼ mile east of Monmouth Ridge Cemetery:

O1—1 inch to 0; leaves, pine needles, and twigs.

A1—0 to 2 inches; very dark grayish brown (10YR 3/2) gravelly sandy loam; weak fine granular structure; very friable; many roots; 15 percent fine gravel; very strongly acid; clear wavy boundary.

B21—2 to 10 inches; yellowish brown (10YR 5/8) gravelly sandy loam; weak fine granular structure; very friable; many roots; 15 percent gravel and cobbles; strongly acid; clear wavy boundary.

B22—10 to 24 inches; yellowish brown (10YR 5/4) gravelly loamy sand; weak fine granular structure; very friable; common roots; 40 percent gravel and cobbles; strongly acid; clear wavy boundary.

B3—24 to 30 inches; yellowish brown (10YR 5/4) gravelly loamy coarse sand; single grained; loose; common roots; 40 percent gravel; medium acid; abrupt wavy boundary.

IIC—30 to 60 inches; light yellowish brown (10YR 6/4) very gravelly coarse sand stratified with gravel and cobbles; single grained; loose; few to no roots; 55 percent gravel and cobbles; medium acid.

Depth to bedrock is generally more than 5 feet. The solum is 12 to 30 inches thick. It ranges from extremely acid through medium acid except where the soil has been limed. Pebbles and cobblestones range from 10 to

50 percent by volume in the solum and 35 to 70 percent in the C horizon.

If there is an Ap horizon, it ranges from very dark grayish brown (10YR 3/2) through brown to dark brown (10YR 4/3). The A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. The upper part of the B horizon has hue of 7.5YR through 10YR, value of 4 or 5, and chroma of 4 through 8. The lower part of the B horizon has hue of 10YR through 2.5Y, value of 4 through 6, and chroma of 4 through 8. The B horizon to a depth of 10 inches ranges from fine sandy loam to loamy coarse sand and the gravelly analogs of those textures. Below a depth of 10 inches, the texture becomes coarser and there is a higher content of coarse fragments. The C horizon has hue of 7.5YR through 2.5Y, value of 5 through 7, and chroma of 2 through 8. Texture ranges from very gravelly fine sand through very cobbly coarse sand with strata of sand, pebbles, and cobblestones.

The excessively drained Hinckley soils are near the excessively drained nongravelly Windsor soils, the moderately well drained Deerfield soils, and the very poorly drained Scarboro soils. The Hinckley soils are also associated on the landscape with the finer textured Scio soils, Biddeford soils, Buxton soils, Hartland soils, Scantic soils, and Suffield soils.

HkB—Hinckley gravelly sandy loam, 3 to 8 percent slopes. This gently sloping soil is on outwash plains, terraces, and tops of eskers.

Included with this soil in mapping are small areas of Hinckley soils that have slopes of less than 3 percent or more than 8 percent and small depressional areas occupied by Deerfield soils. Small areas of included Biddeford soils, Scantic soils, Scarboro soils, or wet organic soils are indicated on the map by wet spot symbols. Also included are small areas of soils that have nongravelly layers of sandy loam, fine sandy loam, or silt loam, 12 to 30 inches thick.

This soil can be used for hay, pasture, woodland, and cultivated crops. Droughtiness is a limitation, and the soil does not retain fertilizers well. Crops on this soil respond well to irrigation and frequent applications of fertilizer. The limitations to the use of this soil for septic tank absorption fields are slight, but pollution may be a hazard to ground water supplies. Capability subclass IIIs; woodland group 5s.

HkC—Hinckley gravelly sandy loam, 8 to 15 percent slopes. This sloping soil is on the edges of outwash terraces and plains and on the sides of eskers. It has the profile described as representative of the series.

Included with this soil in mapping are small areas of Hinckley soils that have slopes of less than 8 percent or more than 15 percent or small depressional areas occupied by Deerfield soils. Small areas of soils that have nongravelly layers of sandy loam, fine sandy loam, and silt loam 12 to 30 inches thick are also included.

This soil is used mainly as woodland, but it can also be used for cultivated crops, hay, and permanent bluegrass pasture. Droughtiness is a limitation, and the soil does not retain fertilizer well. The limitations to the use of this soil for septic tank absorption fields are moderate because of slope. Pollution may be a hazard to ground water supplies. Capability subclass IVs; woodland group 5s.

HkD—Hinckley gravelly sandy loam, 15 to 30 percent slopes. This moderately steep soil is on the edges of outwash terraces and plains and the sides of eskers. The profile of this soil differs from the one described as representative of the series in that it has a thinner subsoil.

Included with this soil in mapping are soils that have slopes of less than 15 percent or more than 30 percent and small areas of soils that have nongravelly layers of sandy loam, fine sandy loam, or silt loam 12 to 30 inches thick.

This soil can be used as woodland and for permanent bluegrass pasture. Droughtiness and moderately steep slopes are the main limitations to other uses. The limitations to the use of this soil for septic tank absorption fields are severe because of slope. Pollution may be a hazard to ground water supplies. Capability subclass VIs; woodland group 5s.

Hollis Series

The Hollis series consists of shallow, somewhat excessively drained, gently sloping to moderately steep soils that formed in glacial till. These soils are on hills and ridges throughout the county. The areas have few to many rock outcrops.

In a representative profile, in a cultivated area, the surface layer is dark brown fine sandy loam 5 inches thick. The subsoil is 13 inches thick. It is brown to dark brown, friable fine sandy loam in the upper 6 inches and yellowish brown, friable gravelly fine sandy loam in the lower 7 inches. Hard bedrock that has a smooth surface is at a depth of 18 inches.

Permeability is moderately rapid. Available water capacity is low.

Hollis soils are used mainly as woodland, but some areas are used for hay, pasture, and cultivated crops. Areas that have many rock outcrops are used mostly as woodland.

Representative profile of Hollis fine sandy loam, 3 to 8 percent slopes, on old pasture land in the town of Pittston, on west side of State Route 27, 100 yards north of the Kelley Road intersection:

Ap—0 to 5 inches; dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; very friable; many roots; 5 percent coarse fragments; very strongly acid; clear wavy boundary.

B21—5 to 11 inches; brown to dark brown (7.5YR 4/4) fine sandy loam; weak fine granular structure; friable; many roots; 5 percent coarse fragments; strongly acid; clear wavy boundary.

B22—11 to 18 inches; yellowish brown (10YR 5/6) gravelly fine sandy loam; weak fine granular structure; friable; many roots; 20 percent coarse fragments; strongly acid; abrupt wavy boundary.

R—18 inches; hard bedrock with a smooth surface.

Thickness of the solum and depth to bedrock range from 10 to 20 inches. The solum has 2 to 25 percent coarse fragments. It ranges from strongly acid to very strongly acid throughout, except where the soil has been limed.

The A1 horizon, if there is one, has the same color range as the Ap horizon. They both have hue of 10YR, value of 2 through 4, and chroma of 2 or 3. The B horizon is mainly fine sandy loam, but the range includes loam, sandy loam, and the gravelly analogs of those textures. The B21 horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 through 8. The B22 horizon has hue of 10YR, value of 4 or 5, and chroma of 4 or 6. The underlying bedrock is dominantly granitic or metamorphic.

The somewhat excessively drained Hollis soils are near the well drained Charlton soils and Paxton soils, the moderately well drained Woodbridge soils, and the poorly drained Monarda soils and Ridgebury soils. Hollis soils are similar to the Lyman soils, but lack the dark reddish brown B21h horizon characteristic of the Lyman soils.

HrB—Hollis fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is on the tops of hills and ridges. It has the profile described as representative of the series. Rock outcrops make up less than 2 percent of the surface.

Included with this soil in mapping are a few areas of Buxton soils or Woodbridge soils. Also included are a few areas of Hollis soils that have slopes of more than 8 percent or depressional areas occupied by Monarda soils or Ridgebury soils. Other inclusions are a few small areas where the soil is more than 20 inches deep over fractured slates or shales and some areas where a few stones are scattered on the surface or where rock outcrops make up 2 to 10 percent of the surface.

This soil is suitable for hay, pasture, woodland, and cultivated crops, but it is used mainly for hay, pasture, and woodland. Shallowness to bedrock and droughtiness limit the use of this soil. Because the hazard of erosion is moderate, some measures for controlling erosion are needed if cultivated crops are grown. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIIe; woodland group 5d.

HrC—Hollis fine sandy loam, 8 to 15 percent slopes. This sloping soil is on the sides of hills and ridges. Rock outcrops make up less than 2 percent of the surface.

Included with this soil in mapping are a few areas of Buxton soils or Woodbridge soils and a few areas of Hollis soils that have slopes of less than 8 percent or more than 15 percent. Also included are areas of Monarda soils or Ridgebury soils or soils underlain by fractured shales or slates. In a few small areas depth to bedrock is more than 20 inches or a few stones are scattered on the surface or rock outcrops make up 2 to 10 percent of the surface.

This soil is suitable for hay, pasture, woodland, and cultivated crops, but it is used mainly for hay, pasture, and woodland. Shallowness to bedrock and droughtiness limit the use of this soil. Because hazard of erosion is severe, some measures for controlling erosion are needed if cultivated crops are grown. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IVe; woodland group 5d.

HrD—Hollis fine sandy loam, 15 to 25 percent slopes. This moderately steep soil is on the sides of hills and ridges. Rock outcrops make up less than 2 percent of the surface.

Included with this soil in mapping are a few areas of Woodbridge soils. Some small areas included in mapping are deeper than 20 inches to bedrock or are over fractured shales or slates. Also included are a few areas of Hollis soils having slopes of less than 15 percent or more than 25 percent. In some areas a few scattered stones are on the surface or rock outcrops make up 2 to 10 percent of the surface.

This soil can be used as woodland and permanent bluegrass pasture but it is used mainly as woodland. More intensive use is limited by slope, shallowness to bedrock, a severe hazard of erosion, and droughtiness. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIe; woodland group 5d.

HtB—Hollis-Rock outcrop complex, 3 to 8 percent slopes. This gently sloping complex is on the tops of hills and ridges. It is about 85 percent Hollis soils and 15 percent Rock outcrop and included soils. The soil and Rock outcrop are so intricately intermingled that it is not practical to map them separately at the scale used.

Included in mapping are a few areas of Buxton soils or Woodbridge soils. Also included are areas that have slopes of more than 8 percent or small depressional areas occupied by Monarda soils and Ridgebury soils and a few small areas where depth to bedrock is more than 20 inches. In some small areas many stones are on the surface.

This complex is suitable for permanent bluegrass pasture, but it is used mainly as woodland. Rock outcrops, droughtiness, and shallowness to bedrock limit its use. The limitations to the use of this complex for septic tank absorption fields are severe. Capability subclass VIs; woodland group 5x.

HtC—Hollis-Rock outcrop complex, 8 to 15 percent slopes. This sloping complex is on the sides of hills and ridges. It is about 85 percent Hollis soils and 15 percent Rock outcrop and included soils. The soil and Rock outcrop are so intricately intermingled that it is not practical to map them separately at the scale used.

Included in mapping are a few areas of Buxton soils or Woodbridge soils and areas of soils that have slopes of less than 8 percent or more than 15 percent. Also included are small depressional areas occupied by Monarda soils and Ridgebury soils, some small areas where the soils are deeper than 20 inches to bedrock, and a few small areas where many stones are on the surface.

This complex is suitable for permanent bluegrass pasture, but it is used mainly as woodland. Rock outcrops, droughtiness, slope, and shallowness to bedrock limit its use. The limitations to its use for septic tank absorption fields are severe. Capability subclass VIs; woodland group 5x.

HtD—Hollis-Rock outcrop complex, 15 to 30 percent slopes. This moderately steep complex is on the rough and irregular sides of hills and ridges. It is about 80 percent Hollis soils and 20 percent Rock outcrop and included soils. The soil and Rock outcrop are so intricately intermingled that it is not practical to map them separately at the scale used.

Included in mapping are a few areas of Woodbridge soils and a few areas of soils that have slopes of less than 15 percent or more than 30 percent. Also included are a few small areas where the soils are deeper than

20 inches to bedrock and some areas where many stones are on the surface.

This complex is suitable for permanent bluegrass pasture, but it is used mainly as woodland. Rock outcrops, droughtiness, slope, and shallowness to bedrock limit the use of this mapping unit. The limitations to its use for septic tank absorption fields are severe. Capability subclass VIs; woodland group 5x.

Limerick Series

The Limerick series consists of deep, poorly drained, nearly level soils that formed in alluvium. These soils are on flood plains throughout the county.

In a representative profile, in a cultivated area, the surface layer is very dark grayish brown silt loam that has yellowish red mottles. It is 10 inches thick. The underlying material, extending to a depth of 22 inches, is gray, friable silt loam that has light olive gray, light yellowish brown, and olive mottles. Below that, to a depth of 60 inches it is gray, friable silt loam that has brown to dark brown mottles.

Permeability is moderate. The available water capacity is high. The soils are subject to frequent flooding.

Limerick soils are used mostly as woodland and pasture.

Representative profile of Limerick silt loam, on cultivated land in the town of Pittston, 800 feet east of the Kennebec River, 300 feet north of the Lincoln County line;

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam; common fine prominent mottles of yellowish red (5YR 4/6) along root channels; weak fine granular structure; friable; many roots; slightly acid; abrupt smooth boundary.

C1g—10 to 22 inches; gray (5Y 5/1) silt loam; many coarse faint and distinct mottles of light olive gray (5Y 6/2), light yellowish brown (2.5Y 6/4), and olive (5Y 5/3); massive; friable; few roots; medium acid; gradual smooth boundary.

C2g—22 to 60 inches; gray (5Y 5/1) silt loam; common coarse prominent circular mottles of brown to dark brown (7.5YR 4/4) with weakly cemented centers; massive; friable; slightly acid.

The depth to bedrock is generally more than 5 feet. Reaction ranges from strongly acid in the upper layers, unless limed, to medium acid to neutral within a 60 inch depth. There are generally no coarse fragments, but as much as 3 percent gravel occurs in some profiles.

The A1 or Ap horizon has a hue of 10YR through 5Y, value of 3 or 4, and chroma of 2 or 3. The C horizon has hue of 2.5Y and 5Y, value of 4 or 5, and chroma of 1 or 2. It is silt loam or very fine sandy loam. Lenses of loamy very fine sand or very fine sand are in some profiles. Mottles range from few to many, and they are faint to prominent throughout the profile.

The poorly drained Limerick soils are near the well drained Hadley soils, the moderately well drained Winooski soils, and the very poorly drained Saco soils.

Lk—Limerick silt loam. This nearly level soil formed in recent alluvium along the larger streams and rivers throughout the county. Slopes are mainly 0 to 3 percent.

Included with this soil in mapping are a few small areas of Hadley soils, Saco soils, or Winooski soils.

This soil is suitable for woodland and pasture, but flooding, wetness, and a low position in relation to drainage outlets limit its use. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIIw; woodland group 4w.

Lyman Series

The Lyman series consists of shallow, somewhat excessively drained, gently sloping to moderately steep soils that formed in glacial till. These soils are on hills and ridges throughout the survey area. There are few to many rock outcrops.

In a representative profile, in a forested area, the surface layer is dark reddish brown loam 3 inches thick. The subsurface layer is pinkish gray fine sandy loam 1 inch thick. The subsoil is friable fine sandy loam, 14 inches thick, that is dark reddish brown in the upper 3 inches and yellowish red in the lower 11 inches. Granite bedrock is at a depth of 18 inches.

Permeability is moderately rapid to moderate. Available water capacity is low.

Lyman soils are used mainly for woodland, but some areas are used for hay and pasture. The areas that have many rock outcrops are used mainly as woodland.

Representative profile of Lyman loam, in an area of Lyman-Rock outcrop complex, 8 to 15 percent slopes, in woodland, 150 feet east of State Route 135, in the town of Monmouth, 400 feet south of the Winthrop town line:

A1—0 to 3 inches; dark reddish brown (5YR 3/2) loam; moderate and strong, fine and medium, granular structure; friable; many roots; 5 percent coarse fragments; very strongly acid; abrupt wavy boundary.

A2—3 to 4 inches; pinkish gray (5YR 6/2) fine sandy loam; weak fine granular structure; very friable; many fine roots; 5 percent coarse fragments; extremely acid; abrupt broken boundary.

B21h—4 to 7 inches; dark reddish brown (5YR 3/4) fine sandy loam; weak medium and fine granular structure; friable; 5 percent coarse fragments; very strongly acid; gradual wavy boundary.

B22ir—7 to 18 inches; yellowish red (5YR 4/6) fine sandy loam; weak medium granular structure; friable; 5 percent coarse fragments; very strongly acid; abrupt smooth boundary.

R—18 inches; granite bedrock.

Thickness of the solum and depth to bedrock range from 10 to 20 inches. The solum is 5 to 25 percent coarse fragments. It ranges from extremely acid to medium acid throughout, except where the soil has been limed.

The A1 horizon is black (N 2/0) or it has hue of 10YR through 5YR, value of 2 or 3, and chroma of 1 or 2. The A2 horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 1 or 2. The B horizon is loam or fine

sandy loam and the gravelly analogs of those textures. The B21h horizon has hue of 2.5YR to 7.5YR, value of 2 to 4, and chroma of 2 through 6. The B22ir horizon has hue of 2.5YR to 7.5YR, value of 3 or 4, and chroma of 3 to 8. In the places where a B23 horizon occurs, it has hue of 7.5YR to 2.5Y, value of 2 to 5, and chroma of 3 or 4. Bedrock is dominantly granitic or metamorphic.

In Kennebec County the Lyman soils have a B22ir horizon that is thicker than is described as within the range for the Lyman series. This difference does not alter the use or management of the soils.

The somewhat excessively drained Lyman soils are near the well drained Berkshire soils, the moderately well drained Peru soils, and the poorly drained Monarda soils and Ridgebury soils. They are similar to Hollis soils but have a redder B21 horizon.

LyB—Lyman loam, 3 to 8 percent slopes. This gently sloping soil is on the tops of hills and ridges. Rock outcrops make up less than 2 percent of the acreage.

Included with this soil in mapping are a few areas of Peru soils. Also included are a few areas of Lyman soils that have slopes of more than 8 percent or small depressional areas occupied by Monarda soils or Ridgebury soils. Other inclusions are a few small areas where depth to bedrock is more than 20 inches and some areas where a few stones are scattered on the surface or where rock outcrops make up 2 to 10 percent of the surface.

This soil can be used for hay, pasture, woodland, and cultivated crops, but it is used mainly for hay, pasture, and woodland. Shallowness to bedrock and droughtiness limit the use of this soil. Because the hazard of erosion is moderate, some measures for controlling erosion are needed if cultivated crops are grown. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIIe; woodland group 4d.

LyC—Lyman loam, 8 to 15 percent slopes. This sloping soil is on the sides of hills and ridges. Rock outcrops make up less than 2 percent of the surface.

Included with this soil in mapping are a few areas of Peru soils, and a few areas of Lyman soils that have slopes of less than 8 percent or more than 15 percent. Also included are a few areas of Monarda soils or Ridgebury soils in small depressions and a few small areas where depth to bedrock is more than 20 inches. In some areas a few scattered stones are on the surface or rock outcrops make up 2 to 10 percent of the surface.

This soil can be used for hay, pasture, woodland, and cultivated crops, but it is used mainly for hay, pasture, and woodland. Shallowness to bedrock and droughtiness limit the use of this soil. Because the hazard of erosion is severe, some measures for controlling erosion are needed if cultivated crops are grown. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IVe; woodland group 4d.

LyD—Lyman loam, 15 to 25 percent slopes. This moderately steep soil is on the sides of hills and ridges. Rock outcrops make up less than 2 percent of the surface.

Included with this soil in mapping are a few areas of Peru soils and some small areas where depth to bedrock is more than 20 inches. Also included are a few areas of Lyman soils that have slopes of less than 15 percent or more than 25 percent. In some areas a few scattered stones may be on the surface or rock outcrops may make up 2 to 10 percent of the surface.

This soil can be used for woodland and permanent bluegrass pasture, but most of it is used as woodland. The limitations to more intensive use are slope, shallowness to bedrock, a severe erosion hazard, and droughtiness. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIe; woodland group 4d.

LzC—Lyman-Rock outcrop complex, 8 to 15 percent slopes. This complex is on the sides of hills and ridges. It is about 85 percent Lyman soil and 15 percent Rock outcrop and included soils. The soil and Rock outcrop in the mapping unit are so intricately intermingled that it is not practical to map them separately. A profile of the Lyman soil in this complex is described as representative of the series.

Included in mapping are a few areas of Peru soils and areas of soils that have slopes of less than 8 percent or more than 15 percent. Also included are small depressional areas occupied by Monarda soils or Ridgebury soils, some small areas where the soils are deeper than 20 inches to bedrock, and a few small areas where many stones are on the surface.

This complex is suited to permanent bluegrass pasture but is used mainly as woodland. Rock outcrops, droughtiness, slopes, and shallowness to bedrock limit the use of this complex. The limitations to the use of these soils for septic tank absorption fields are severe. Capability subclass VIs; woodland group 4x.

Monarda Series

The Monarda series consists of deep, poorly drained, nearly level soils that formed in glacial till. These soils are on smooth low upland ridges in the northeastern part of the county.

In a representative profile, in a forested area, there is a thin layer of leaf litter and mosses over a very dark grayish brown silt loam surface layer about 5 inches thick. The subsoil is 8 inches thick. In the upper 3 inches it is friable silt loam that has light brownish gray mottles, and in the lower 5 inches it is friable silt loam that has olive mottles. The underlying material is olive gray very firm silt loam that has dark brown, olive brown, and black mottles in the upper 17 inches; greenish gray, very firm silt loam that has gray, dark brown, and light olive brown mottles in the next 12 inches; and dark grayish brown, firm silt loam that has gray, olive gray, and light olive brown mottles to a depth of 60 inches.

Permeability is slow to very slow. The available water capacity is moderate. These are naturally stony soils, but some areas have been cleared of stones.

These soils are used mostly as woodland, but a few areas are used for hay and pasture.

Representative profile of Monarda silt loam described in an area of Monarda very stony silt loam, in woodland, in the town of Clinton, 50 feet south of Goodrich Road, at the point 1,500 feet west of Hill Road:

O1—1 inch to 0; undecomposed to slightly decomposed leaf litter and mosses.

A1—0 to 5 inches; very dark grayish brown

(10YR 3/2) silt loam; moderate fine and medium granular structure; friable; many roots; 5 percent coarse fragments; very strongly acid; abrupt irregular boundary.

B21g—5 to 8 inches; light brownish gray (2.5Y 6/2) silt loam; many coarse distinct mottles of brown (10YR 5/3), olive brown (2.5Y 4/4), dark yellowish brown (10YR 4/4), and a few medium distinct mottles of dark gray (10YR 4/1); weak fine and medium granular structure; friable; many roots; many pores; 5 percent coarse fragments; strongly acid; abrupt wavy boundary.

B22—8 to 13 inches; olive (5Y 4/3) silt loam; many medium distinct and prominent mottles of olive brown (2.5Y 4/4), dark yellowish brown (10YR 4/4), olive (5Y 5/3), and gray (5Y 5/1); moderate fine and medium subangular blocky structure; friable; common roots; common fine pores; 10 percent coarse fragments; strongly acid; clear wavy boundary.

C1x—13 to 30 inches; olive gray (5Y 5/2) silt loam; many fine distinct mottles of dark brown (10YR 3/3), olive brown (2.5Y 4/4), and black (5Y 2/1); mottles on 40 percent or more of ped faces; strong coarse prismatic structure separating to moderate thick platy; very firm, brittle in 60 percent or more of the mass; a few fine roots between prisms; a few fine pores have very thin silt coatings; prism faces are light olive gray (5Y 6/2); 5 percent coarse fragments; medium acid; abrupt smooth boundary.

C2x—30 to 42 inches; greenish gray (5GY 6/1) silt loam; many fine and medium distinct and prominent mottles of gray (N 5/0), dark brown (7.5YR 3/2), and light olive brown (2.5Y 5/4); strong very coarse prismatic structure; very firm, brittle; very few fine roots on prism faces; very few fine uncoated pores; 5 percent coarse fragments; slightly acid; gradual smooth boundary.

C3x—42 to 60 inches; dark grayish brown (2.5Y 4/2) silt loam; few fine and medium distinct mottles of gray (5Y 5/1), olive gray (5Y 5/2), light olive brown (2.5Y 5/4), and dark gray (N 4/0); strong very coarse prismatic structure ending at a depth of 50 inches; massive within prisms and below a depth of 50 inches; firm, brittle and nonsticky; 10 percent coarse fragments; slightly acid.

Depth to bedrock is generally more than 5 feet. Depth to the fragipan ranges from 12 to 30 inches. The soil is 5 to 35 percent coarse fragments throughout. The solum ranges from very strongly acid to slightly acid, and the underlying material ranges from strongly acid to neutral.

The A1 horizon has colors with hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2. The Ap horizon, where it occurs, has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The B horizon has hue of 2.5Y or 5Y, value of 4 through 6, and chroma of 1 through 3. It is commonly silt loam, but the range includes loam, very fine sandy loam, and the gravelly analogs of those textures. The Cx horizon has hue of 2.5Y, 5Y, and 5GY, value of 4 through 6, and chroma of 1 through 4. It is silt loam or very fine sandy loam and the gravelly analogs of those textures. Consistence is firm or very firm.

The poorly drained Monarda soils are near the somewhat excessively drained Hollis soils and Lyman soils, the well drained Charlton soils and Paxton soils, and the moderately well drained Woodbridge soils.

MoA—Monarda silt loam. This nearly level soil is in depressions on long, seeped side slopes and at the base of smooth, low upland ridges. Slopes are mainly 0 to 3 percent, but some areas are steeper.

Included with this soil in mapping are a few areas that have a surface layer of sandy loam and some very poorly drained soils in depressions. Some areas mapped near Hollis soils or Lyman soils are less than 40 inches deep to bedrock. Also included are a few areas of Woodbridge soils on knolls. Cleared fields usually are fenced by stone walls and have an occasional pile of stones within the field.

Most of the acreage is wooded, but occasional fields are used for hay and pasture. Surface drainage will improve yields. Wetness is the major limitation if this soil is used for cultivated crops. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIIw; woodland group 4w.

MrA—Monarda very stony silt loam. This nearly level soil is in depressions on long seeped side slopes and at the base of smooth, low upland ridges. Stones cover 3 percent of the surface. Slopes are mainly 0 to 3 percent, but some areas are steeper.

Included with this soil in mapping are areas along intermittent streams that have as much as 15 percent of the surface covered by stones. Also included are small knolls of Woodbridge soils and some very poorly drained soils. Some areas mapped near Hollis soils or Lyman soils are less than 40 inches deep to bedrock.

This soil is mainly in woodland, but a few areas are used for unimproved pasture. Stoniness and wetness are the major limitations. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIIsw; woodland group 4w.

Paxton Series

The Paxton series consists of deep, well drained, gently sloping to moderately steep soils that formed in glacial till. These soils are on the tops and sides of hills and ridges.

In a representative profile, in a cultivated area, the surface layer is dark yellowish brown fine sandy loam about 8 inches thick. The subsoil is 23 inches thick. The upper 4 inches is strong brown, friable gravelly fine sandy loam; the next 11 inches is yellowish brown, friable gravelly fine sandy loam; and the lower 8 inches is light brownish gray, friable gravelly fine sandy loam. The underlying material extending to a depth of 60 inches is olive brown, firm fine sandy loam.

Permeability is moderately slow to slow. The available water capacity is moderate. These are naturally stony soils, but cultivated areas have been cleared of stones.

These soils are used mostly for woodland, hay, and pasture. Some areas are used for cultivated crops, apple orchards, and building sites.

Representative profile of Paxton fine sandy loam, 3 to 8 percent slopes, in an idle field in the town of Readfield, 1,300 feet east of Fog Road, ½ mile south of the Mount Vernon town line:

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; friable; many roots; 16 percent coarse fragments; strongly acid; abrupt smooth boundary.

B21—8 to 12 inches; strong brown (7.5YR 5/6) gravelly fine sandy loam; weak fine granular structure; friable; many roots; 23 percent coarse fragments; strongly acid; abrupt broken boundary.

B22—12 to 23 inches; yellowish brown (10YR 5/6) gravelly fine sandy loam; weak fine granular structure; friable; many roots; 23 percent coarse fragments; strongly acid; clear wavy boundary.

B3—23 to 31 inches; light brownish gray (2.5Y 6/2) gravelly fine sandy loam; moderate medium platy structure; friable; few roots; 25 percent coarse fragments; medium acid; abrupt wavy boundary.

Cx—31 to 60 inches; olive brown (2.5Y 4/4) fine sandy loam with dark brown (10YR 3/3) ped faces; strong medium and thick platy structure; firm; brittle; 15 percent coarse fragments; medium acid.

Depth to bedrock is generally more than 5 feet. The solum thickness and depth to a fragipan range from 15 to 36 inches. Coarse fragments range from 5 to 30 percent of the solum and the fragipan. The solum and underlying till are strongly acid to slightly acid.

If there is an A1 horizon, it has a hue of 10YR, value of 2 or 3, and chroma of 1 or 2. The Ap horizon has a hue of 10YR, value of 3 or 4, and chroma of 2 through 4. The B21 horizon has a hue of 7.5YR through 10YR, value of 5, and chroma of 6 or 8. The B22 and B3 horizons have a hue of 2.5Y, value of 5 or 6 and chroma of 2 through 4 or a hue of 10YR, value of 5, and chroma of 4 or 6. The B horizon is fine sandy loam or loam but ranges to sandy loam or the gravelly analogs of those textures. There is an A'2 horizon in some profiles. A few mottles are immediately above the fragipan or within the fragipan in some profiles. The Cx horizon has a hue of 2.5Y, value of 4 through 6, and chroma of 2 or 4 or a hue of 5Y, value of 4 through 6, and chroma of 2 or 3. It is fine sandy loam or loam and the gravelly analogs of those textures.

The well drained Paxton soils are near the somewhat excessively drained Hollis soils, the moderately well drained Woodbridge soils, and the poorly drained Ridgebury soils. They are also near the well drained Charlton soils which do not have a fragipan within a depth of 40 inches.

PbB—Paxton fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is on the tops or sides of hills and ridges. A profile of this soil is described as representative of the series.

Included with this soil in mapping are small areas of Charlton soils, Hollis soils, or Woodbridge soils. Also included are a few areas of Paxton soils that have a slope of more than 8 percent or small depressional areas occupied by Ridgebury soils.

This soil is used mainly for hay and pasture. It is well suited to woodland and apple orchards. It is also suited to hay, pasture, and the cultivated crops commonly grown in the area. Because the hazard of erosion is moderate, some measures for controlling erosion are needed if cultivated crops are grown. The limitations to the use of the soil for septic tank absorption fields are severe. Capability subclass IIe; woodland group 3o.

PbC—Paxton fine sandy loam, 8 to 15 percent slopes. This sloping soil is on the sides of hills and ridges. The profile of this soil differs from the one described as representative of the series in that it has a thinner surface layer and subsoil.

Included with this soil in mapping are small areas of Charlton soils, Hollis soils, Ridgebury soils, or Woodbridge soils. A few areas have slopes of more than 15 percent or less than 8 percent.

This soil is used mainly for hay and pasture. It is suited to hay, pasture, woodland, and the cultivated crops commonly grown in the area. Because the hazard of erosion is high, some measures for controlling erosion are needed if cultivated crops are grown. It is well suited to apple orchards. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIIe; woodland group 3o.

PcB—Paxton very stony fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is on the tops or sides of hills and ridges. Stones cover up to 3 percent of the surface.

Included with this soil in mapping are small areas of Charlton soils, Hollis soils, or Woodbridge soils and a few areas of Paxton soils that have slopes of more than 8 percent, or small depressional areas occupied by Ridgebury soils. In a few areas stones cover more than 3 percent of the surface.

This soil is used mainly as woodland and is well suited to this use. It is poorly suited to cultivated crops and hay because of stoniness, but it may be used for permanent bluegrass pasture and apple orchards. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIs; woodland group 3o.

PcC—Paxton very stony fine sandy loam, 8 to 15 percent slopes. This sloping soil is on the sides of hills and ridges. Stones cover as much as 3 percent of the surface.

Included with this soil in mapping are small areas of Charlton soils, Hollis soils, Ridgebury soils, or Woodbridge soils. Also included are a few areas of Paxton soils that have slopes of less than 8 percent or more than 15 percent and a few areas where stones cover more than 3 percent of the surface.

This soil is used mainly as woodland and is well suited to this use, but it may be used for permanent bluegrass pasture and apple orchards. It is poorly suited to cultivated crops and hay because of stoniness

and slope. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIs; woodland group 3o.

PcD—Paxton very stony fine sandy loam, 15 to 25 percent slopes. This moderately steep soil is on the sides of hills and ridges. Stones cover as much as 3 percent of the surface.

Included with this soil in mapping are small areas of Charlton soils, Hollis soils, Ridgebury soils, or Woodbridge soils. Also included are a few areas of Paxton soils that have slopes of less than 15 percent or more than 25 percent and a few areas where stones cover more than 3 percent of the surface.

This soil is used mainly as woodland and is suited to this use, but it may be used for permanent bluegrass pasture. It is poorly suited to cultivated crops and hay because of stoniness and slope. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIs; woodland group 3r.

PdB—Paxton-Charlton fine sandy loams, 3 to 8 percent slopes. This gently sloping mapping unit is on the tops and sides of hills and ridges. It is about 60 percent Paxton soils and 40 percent Charlton and other soils. The soils in this mapping unit are so intricately intermingled that it is not practical to map them separately at the scale used.

Included in mapping are small areas of Hollis soils, Ridgebury soils, or Woodbridge soils and small areas that have slopes of more than 8 percent.

These soils are used mainly for hay and pasture. They are well suited to woodland and are also suited to hay, pasture, apple orchards, and crops commonly grown in the area. Because the hazard of erosion is moderate, some measures for controlling erosion are needed if cultivated crops are grown. The Paxton soils have severe limitations to their use for septic tank absorption fields and the Charlton soils have slight limitations. Capability subclass IIe; woodland group 3o.

PdC2—Paxton-Charlton fine sandy loams, 8 to 15 percent slopes, eroded. This mapping unit is on the sides of hills and ridges. It is about 60 percent Paxton soils and 40 percent Charlton and other soils. These soils are so intricately intermingled that it is not practical to map them separately at the scale used. The profiles of these soils differ from the profiles described as representative of their series in having a thinner surface layer and subsoil.

Included with these soils in mapping are small areas of Hollis soils, Ridgebury soils, or Woodbridge soils. Also included are small areas of soils that have slopes of less than 8 percent or more than 15 percent.

These soils are used mostly for hay and pasture, but they are suited to hay, pasture, woodland, and all the crops commonly grown in the area. Because the hazard of erosion is high, some measures for controlling erosion are needed if cultivated crops are grown. These soils are well suited to apple orchards. The limitations to the use of Paxton soils for septic tank absorption fields are severe. The limitations to the use of Charlton soils for septic tank absorption fields are moderate. Capability subclass IIIe; woodland group 3o.

PdD2—Paxton-Charlton fine sandy loams, 15 to 25 percent slopes, eroded. This moderately steep mapping unit is on the sides of hills and ridges. It is about 60 percent Paxton soils and 40 percent Charlton and other soils. These soils are so closely intermingled that it is not practical to map them separately at the scale used. The profiles of these soils differ from the ones described as representative of their series in that they have a thinner surface layer and subsoil.

Included with these soils in mapping are small areas of Hollis soils or Woodbridge soils and small areas of soils that have slopes of less than 15 percent or more than 25 percent.

These soils are used mainly for hay, pasture, and woodland and are suitable for these uses. Because the hazard of erosion is severe, very careful management is required if cultivated crops are grown. The limitations to the use of these soils for septic tank absorption fields are severe. Capability subclass IVe; woodland group 3r.

PeB—Paxton-Charlton very stony fine sandy loams, 3 to 8 percent slopes. The gently sloping soils in this mapping unit are on the tops and sides of hills and ridges. This mapping unit is about 60 percent Paxton soils and 40 percent Charlton and other soils. These soils are so closely intermingled that it is not practical to map them separately at the scale used. Stones cover as much as 3 percent of the surface.

Included with these soils in mapping are small areas of Hollis soils, Ridgebury soils, or Woodbridge soils. Also included are small areas of soils that have slopes of more than 8 percent or areas where more than 3 percent of the surface is covered by stones.

These soils are used mainly as woodland and are well suited to this use. They may be used for permanent bluegrass pasture and apple orchards. They are poorly suited to cultivated crops and hay because of stoniness. The limitations to the use of Paxton soils for septic tank absorption fields are severe, and the limitations to the use of Charlton soils for septic tank absorption fields are moderate. Capability subclass VIs; woodland group 3o.

PeC—Paxton-Charlton very stony fine sandy loams, 8 to 15 percent slopes. This mapping unit is on the sides of hills and ridges. It is about 60 percent Paxton soils and 40 percent Charlton and other soils. These soils are so closely intermingled that it is not practical to map them separately at the scale used. Stones cover as much as 3 percent of the surface.

Included in mapping are small areas of Hollis soils, Ridgebury soils, or Woodbridge soils and a few areas that have slopes of less than 8 percent or more than 15 percent. More than 3 percent of the surface is covered by stones in places.

These soils are used mainly as woodland and are well suited to this use. They may be used for permanent bluegrass pasture and apple orchards. They are poorly suited to cultivated crops and hay because of stoniness. The limitations to the use of the Paxton soils for septic tank absorption fields are severe and for Charlton soils are moderate. Capability subclass VIs; woodland group 3o.

PeD—Paxton-Charlton very stony fine sandy loams, 15 to 30 percent slopes. This moderately steep mapping unit is on the sides of hills and ridges. It is about 60 percent Paxton soils and 40 percent Charlton and other soils. These soils are so closely intermingled that it is not practical to map them separately at the scale used. Stones cover as much as 3 percent of the surface. Pro-

files of the Paxton and Charlton soils in this complex differ from those described as representative of the Paxton and Charlton series in that they have a thinner solum.

Included in mapping are small areas of Hollis soils or Woodbridge soils, small areas that have slopes of less than 15 percent or more than 30 percent, and a few areas where stones cover more than 3 percent of the surface.

This mapping unit is used mainly as woodland, and it is suited to this use. It is also suited to permanent bluegrass pasture. It is poorly suited to cultivated crops and hay because of stoniness and slope. The limitations to the use of these soils for septic tank absorption fields are severe. Capability subclass VIs; woodland group 3r.

Peru Series

The Peru series consists of deep, moderately well drained, gently sloping to sloping soils that formed in glacial till. These soils are on hills and ridges.

In a representative profile, in a cultivated area, the surface layer is very dark grayish brown fine sandy loam 5 inches thick. The subsoil is 17 inches thick. The upper 5 inches is dark brown, friable fine sandy loam; the next 3 inches is brown to dark brown, very friable fine sandy loam; and the lower 9 inches is friable mottled light olive brown fine sandy loam. The underlying material extending to a depth of 60 inches is olive brown, very firm and brittle fine sandy loam that has greenish gray mottles.

Permeability is moderately slow to slow. The available water capacity is moderate. These soils are naturally stony, but many areas have been cleared for cultivation.

Peru soils are used mainly for hay, pasture, and woodland.

Representative profile of Peru fine sandy loam, 3 to 8 percent slopes, in a cultivated area, in the town of Rome, on west side of State Route 27, ¼ mile north of junction with State Route 225:

Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) fine sandy loam; moderate medium granular structure; friable; many fine roots; 10 percent coarse fragments; strongly acid; abrupt smooth boundary.

B21ir—5 to 10 inches; dark brown (7.5YR 3/2) fine sandy loam; weak fine and medium granular structure; friable; many fine roots; 10 percent coarse fragments; strongly acid; abrupt wavy boundary.

B22—10 to 13 inches; brown to dark brown (7.5YR 4/4) fine sandy loam; weak coarse granular structure; very friable; common roots; 10 percent coarse fragments; strongly acid; clear smooth boundary.

B23—13 to 22 inches; light olive brown (2.5Y 5/4) fine sandy loam; many coarse prominent mottles of strong brown (7.5YR 5/6), dark reddish brown (5YR 3/4), reddish gray (5YR 5/2) and many coarse distinct mottles of gray (5Y 5/1), olive (5Y 5/3), and light olive gray (5Y 6/2); weak thin platy structure; friable; common roots; 10 percent coarse fragments; medium acid; abrupt smooth boundary.

Cx—22 to 60 inches; olive brown (2.5Y 4/4) fine sandy loam; many coarse prominent mottles of greenish gray (5GY 5/1) surrounded by brown to dark brown (7.5YR 4/4) and strong brown (7.5YR 5/6) rings; massive in place parting to weak thick platy structure; very firm, brittle; 10 percent coarse fragments; medium acid.

Depth to bedrock is generally more than 5 feet. Depth to the fragipan ranges from 18 to 36 inches. The solum and fragipan are from 5 to 30 percent coarse fragments. The solum and underlying till range from very strongly acid to medium acid, except where the soil has been limed.

The Ap horizon has hue of 10YR, value of 2 through 4, and chroma of 2 or 3. The A1 horizon, if it occurs, has hue of 10YR, value of 2 or 3, and chroma of 2. A discontinuous A2 horizon is in undisturbed profiles, but commonly does not occur in cultivated profiles. A thin discontinuous black (5YR 2/1) or dark reddish brown (5YR 2/2) B21h horizon occurs in some profiles. The B21ir horizon has hue of 7.5YR, value of 3 or 4, and chroma of 2 or 4. The lower part of the B horizon has hue of 7.5YR through 5Y, value of 4 or 5, and chroma of 2 through 4. The B horizon is generally fine sandy loam or loam but ranges to sandy loam or the gravelly analogs of those textures. There is an A'2 horizon in some profiles. The Cx horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 through 4. It is dominantly fine sandy loam or loam and the gravelly analogs of those textures. Consistence of the Cx horizon is firm or very firm with the brittleness characteristic of fragipans.

The moderately well drained Peru soils are near the well drained Berkshire soils, the somewhat excessively drained Lyman soils, and the poorly drained Ridgebury soils.

PfB—Peru fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is on the tops or sides of hills and ridges and in some depressions. A profile of this soil is described as representative of the series. This soil has been cleared of surface stones.

Included with this soil in mapping are a few small areas of Berkshire soils, Lyman soils, or Ridgebury soils and some areas of soils that have slopes of more than 8 percent.

This soil is used mainly for hay and pasture, but it is suited to hay, pasture, woodland, and cultivated crops. Wetness and moderately slow to slow permeability in the fragipan are the main limitations to the use of this soil. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIw; woodland group 3o.

PkB—Peru very stony fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is on the tops or sides of hills and ridges. Stones cover as much as 3 percent of the surface.

Included with this soil in mapping are small areas

of Peru soils that have more than 3 percent of the surface covered by stones or a few areas of soils that have slopes of more than 8 percent. Also included are a few small areas of Berkshire soils, Lyman soils, or Ridgebury soils.

This soil is used mainly as woodland, and it is suited to this use. It is also suited to permanent bluegrass pasture. It is poorly suited to cultivated crops and hay because of wetness and stoniness. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIs; woodland group 3o.

PkC—Peru very stony fine sandy loam, 8 to 15 percent slopes. This sloping soil is on the sides of hills and ridges. Stones cover as much as 3 percent of the surface.

Included with this soil in mapping are small areas of Peru soils that have slopes of less than 8 percent or more than 15 percent, small areas of Berkshire soils, Lyman soils, or Ridgebury soils, and a few small areas where stones cover more than 3 percent of the surface.

This soil is used mainly as woodland and is suited to this use. It also may be used for permanent bluegrass pasture. It is poorly suited to cultivated crops and hay because of stones, wetness, and slopes. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIs; woodland group 3o.

Ridgebury Series

The Ridgebury series consists of deep, poorly drained, nearly level soils that formed in glacial till. These soils are in low-lying areas on upland ridges throughout the county.

In a representative profile, in a cultivated area, the surface layer is very dark grayish brown fine sandy loam 8 inches thick. The subsoil is mottled, olive gray, friable fine sandy loam about 6 inches thick. The underlying material, extending to a depth of 60 inches, is olive, firm to very firm fine sandy loam that has light gray to gray and olive mottles.

Permeability is moderately slow to slow. The available water capacity is moderate. These are naturally stony soils, but some areas have been cleared. Wetness is the main limitation to the use of these soils.

Ridgebury soils are used mainly as woodland, but a few areas are used for hay and pasture.

Representative profile of Ridgebury fine sandy loam, in a cultivated area in the town of Readfield, 50 feet west of State Route 135, ½ mile south of Manchester town line:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) fine sandy loam; strong medium granular structure; friable; many roots; 5 percent coarse fragments; medium acid; abrupt smooth boundary.

Bg—8 to 14 inches; olive gray (5Y 5/2) fine sandy loam; many medium distinct mottles of light gray to gray (5Y 6/1) and olive (5Y 5/6); massive parting to weak medium granular structure; friable; few roots; 5 percent coarse fragments; medium acid; clear smooth boundary.

C1x—14 to 24 inches; olive (5Y 5/3) fine sandy loam; many coarse distinct mottles of light gray to gray (5Y 6/1) and olive (5Y 5/6); massive in place parting to weak thick platy structure; firm and brittle; 5 percent coarse fragments; medium acid; clear smooth boundary.

C2x—24 to 60 inches; olive (5Y 5/3) fine sandy loam; common coarse distinct mottles of gray (5Y 5/1) and olive (5Y 5/6); massive; very firm and brittle; 5 percent coarse fragments; medium acid.

Depth to bedrock is generally more than 5 feet. Depth to the fragipan ranges from 10 to 25 inches. The solum and fragipan are from 5 to 35 percent coarse fragments. Reaction ranges from very strongly acid to medium acid except where the soil has been limed.

The Ap horizon has hue of 10YR through 5Y, value of 2 or 3, and chroma of 1 or 2. The A1 horizon, where it occurs, is neutral or has hue of 10YR through 5Y, value of 2 or 3, and chroma of 1 or 2. The B horizon has hue of 10YR through 5Y, value of 4 through 6, and chroma of 2 or less. It is commonly fine sandy loam, but ranges to sandy loam, loam, or the gravelly analogs of those textures. The Cx horizon has hue of 10YR through 5Y, value of 3 through 6, and chroma of 1 to 4. It ranges from coarse sandy loam to loam or the gravelly analogs of those textures.

The poorly drained Ridgebury soils are near the well drained Berkshire soils, Charlton soils, and Paxton soils and the somewhat excessively drained Hollis soils and Lyman soils. They are also near the moderately well drained Peru soils and Woodbridge soils.

RcA—Ridgebury fine sandy loam. This nearly level soil is in depressions and at the base of slopes. Slopes are mainly 0 to 3 percent, but some areas are steeper. A profile of this soil is described as representative of the series.

Included with this soil in mapping are some areas that have friable underlying material or a few very poorly drained areas that have an organic surface layer more than 4 inches thick. Also included are a few areas of Peru soils or Woodbridge soils.

This soil has been cleared of stones and can be used for hay, pasture, and woodland. Surface drainage improves its suitability for hay, pasture, and cultivated crops. Wetness limits the use of this soil for cultivated crops. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIIw; woodland group 4w.

RdA—Ridgebury very stony fine sandy loam. This nearly level soil is in depressions and at the base of slopes. Slopes are mainly 0 to 3 percent, but some areas are steeper. Stones cover as much as 3 percent of the surface.

Included with this soil in mapping are some areas that have friable underlying material or a few very poorly drained areas that have an organic surface layer more than 4 inches thick. Also included are a few areas of Peru soils or Woodbridge soils and a few areas where stones cover more than 3 percent of the surface.

This soil is used mainly as woodland. Wetness and stoniness are the main limitations for most uses of this soil. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIIsw; woodland group 4w.

Rifle Series

The Rifle series consists of deep, nearly level, very poorly drained organic soils that formed in a mixture of herbaceous and woody materials. Throughout the county these soils are in depressions where the water table is at or near the surface. The surrounding topography is rolling and irregular.

In a representative profile mucky peat extends to a depth of 65 inches. The upper 12 inches is black, the next 24 inches is dark reddish brown, the next 12 inches is black, and the lower 17 inches is dark reddish brown.

Rifle soils are saturated with water nearly all the time, and frequently 6 to 12 inches of water is ponded on the surface.

Rifle soils are used mainly for wildlife habitat.

Representative profile of Rifle mucky peat, in the town of China, north of Hanson Neighborhood, 1,000 feet south of Evans Pond on west side of Hunter Brook:

Oe1—0 to 12 inches; black (10YR 2/1) on broken face and when pressed and rubbed; hemic material; about 60 percent fiber unrubbed and 40 percent fiber rubbed; moderate medium and thick platy structure; friable; many roots; about 5 percent coarse woody fragments; slightly acid; clear smooth boundary.

Oe2—12 to 24 inches; dark reddish brown (5YR 2/2) on broken face; black (5YR 2/1) pressed; hemic material; about 60 percent fiber unrubbed and 40 percent fiber rubbed; weak thick platy structure; slightly sticky; few roots; about 5 percent coarse woody fragments; slightly acid; clear smooth boundary.

Oe3—24 to 36 inches; dark reddish brown (5YR 2/2) on broken face; black (5YR 2/1) pressed; hemic material; about 50 percent fiber unrubbed and 40 percent fiber rubbed; massive; slightly sticky; about 10 percent coarse woody fragments; neutral; gradual smooth boundary.

Oe4—36 to 48 inches; black (5YR 2/1) on broken face and when pressed and rubbed; hemic material about 50 percent fiber unrubbed and 30 percent fiber rubbed; massive; slightly sticky; about 10 percent coarse woody fragments; logs and stumps; neutral; gradual smooth boundary.

Oe5—48 to 65 inches; dark reddish brown (5YR 2/2) on broken face; black (5YR 2/1) when pressed; hemic material; about 60 percent fiber unrubbed and 40 percent fiber rubbed; massive; slightly sticky; about 15 percent coarse woody fragments; logs and stumps; slightly acid.

The organic material appears to be mainly herbaceous fiber. Coarse woody fragments that cannot be crushed between the fingers make up as much as 15 percent, by volume, of some layers. These soils are dominantly slightly acid to neutral throughout, but they range from medium acid to neutral. In some places as much as 6 inches of sphagnum moss is on the surface.

The surface tier varies in color, depending upon the state of decomposition, and the kind of plant cover. It has hue of 10YR to 5YR, value of 2 to 6, and chroma of 1 to 4. The lower tiers have hue of 10YR to 5YR, value of 2 to 4, and chroma of 1 to 4. Rubbed colors have about the same range as those on broken faces.

The very poorly drained Rifle soils, Togus soils, and Vassalboro soils formed in similar material. Rifle soils formed in thicker deposits of organic material than Togus soils and contain less fiber than Vassalboro soils.

RF—Rifle mucky peat. This nearly level soil is in depressions where the slope is less than 2 percent.

Included with this soil in mapping are areas, around the outer edge of this soil, where the soils are less than 51 inches thick to mineral soil material. Also included are some areas that have been covered by sandy or silty sediments, 3 to 10 inches thick, as a result of flooding. There are ponds within some of the mapped areas.

About 75 percent of the acreage is in woodland, and the soil is used mainly for wildlife habitat. The trees are mainly balsam fir, black spruce, red maple, elm, alders, and gray birch, but they grow very slowly. This soil is not suited to commercial timber production. Capability subclass VIIw; not in a woodland group.

Saco Series

The Saco series consists of deep, very poorly drained, nearly level soils that formed in alluvium. These soils occur throughout the county.

In a representative profile, in a forested area, the surface layer is very dark gray, very fine sandy loam 11 inches thick. The underlying material, extending to a depth of 34 inches, is gray, slightly plastic silt loam that has olive, very dark gray, strong brown, yellowish red, and greenish gray mottles. Below that, to a depth of 60 inches, it is gray, nonsticky, very fine sandy loam that has light gray to gray mottles.

Permeability is moderate. The available water capacity is high. These soils are subject to frequent flooding.

Saco soils are used mainly as woodland.

Representative profile of Saco very fine sandy loam, in a wooded area of Saco soils, in the town of Mount Vernon, 400 feet south of Crank Road, 3,000 feet southeast of Wings Mills Dam.

A1—0 to 11 inches; very dark gray (10YR 3/1) very fine sandy loam; weak medium granular structure; nonsticky; many roots; strongly acid; abrupt smooth boundary.

C1g—11 to 16 inches; gray (5Y 5/1) silt loam; few medium distinct mottles of olive (5Y 5/3) and very dark gray (5Y 3/1); massive; slightly plastic, slightly sticky; few roots; medium acid; clear smooth boundary.

C2g—16 to 34 inches; gray (5Y 5/1) silt loam; many coarse prominent mottles of strong brown (7.5YR 5/8), yellowish red (5YR 5/8), and greenish gray (5G 6/1); massive; slightly sticky, slightly plastic; few fine roots; medium acid; abrupt smooth boundary.

C3g—34 to 60 inches; gray (5Y 5/1) very fine

sandy loam; common coarse distinct mottles of light gray to gray (5Y 6/1); massive; nonsticky, nonplastic; neutral.

Depth to bedrock is generally more than 5 feet. Reaction ranges from strongly acid in the upper part of the profile to neutral in the lower part. Most profiles contain no coarse fragments, but some have as much as 2 or 3 percent gravel throughout or have thin gravelly strata. Some profiles contain buried layers of organic material.

The Ap or A1 horizon has a hue of 10YR through 2.5Y, value of 2 or 3, and chroma of 1 or 2. The lower horizons are variable in thickness, color, and number. The C horizon is neutral or has a hue of 10YR to 5Y, value of 3 to 6, and chroma of 1. It is dominantly silt loam or very fine sandy loam to a depth of 60 inches, but some profiles contain lenses of loamy fine sand, loamy very fine sand, or sandy loam.

The very poorly drained Saco soils are near the well drained Hadley soils, the moderately well drained Winooski soils, and the poorly drained Limerick soils.

SA—Saco soils. These nearly level soils are on flood plains along the larger streams and rivers throughout the county. Slopes are less than 2 percent. The texture of the surface layer is quite variable, ranging from sand to clay and the gravelly and cobbly analogs of those textures. In some areas the surface layer is mucky.

Included with these soils in mapping are a few small areas of Hadley soils, Limerick soils, or Winooski soils. Some areas have small freshwater marshes and have been identified on the soil map by marsh symbols. Also included are sandy or gravelly areas.

This soil is used mainly for woodland and wetland wildlife habitat. Flooding and wetness limit the use of this soil. The limitations to the use of this soil for septic tank absorption fields are severe. This soil is not suited to commercial timber production. Capability subclass VIw; not in a woodland group.

Scantic Series

The Scantic series consists of deep, poorly drained, nearly level soils that formed in marine or lacustrine sediments. These soils are in valleys and low, flat areas throughout the county.

In a representative profile, in a cultivated area, the surface layer is dark gray silt loam 9 inches thick. It has light gray to gray mottles. The subsoil is 21 inches thick. The upper 8 inches is olive gray, firm silty clay loam that has greenish gray and dark brown mottles; the lower 13 inches is gray, firm silty clay that has olive and brown to dark brown mottles. The underlying material, which extends to a depth of 60 inches, is gray, firm silty clay that has greenish gray, olive, and olive gray mottles.

Permeability is slow to very slow. Available water capacity is high.

These soils are used mainly as woodland, but some areas are used for hay and pasture. Some areas are used for urban or industrial development.

Representative profile of Scantic silt loam, in an abandoned field, in the town of Belgrade, 100 feet south of the intersection at the south end of Penny Road:

Ap—0 to 9 inches; dark gray (10YR 4/1) silt loam; common medium distinct mottles of light gray to gray (10YR 6/1); weak medium and coarse granular structure; friable; many roots; strong brown (7.5YR 5/8) stains along root channels; medium acid; abrupt smooth boundary.

B21g—9 to 17 inches; olive gray (5Y 5/2) ped interiors, gray (5Y 5/1) ped exteriors, silty clay loam; many medium prominent mottles of greenish gray (5GY 5/1), dark brown (10YR 3/3), and dark brown (7.5YR 3/2); weak fine to coarse subangular blocky structure; firm; common roots; medium acid; abrupt smooth boundary.

B22g—17 to 30 inches; gray (5Y 5/1) silty clay; many medium and coarse distinct mottles of olive (5Y 5/3) and brown to dark brown (7.5YR 4/4); moderate coarse prismatic structure parting to weak thick platy; firm; few roots along ped faces; medium acid; clear smooth boundary.

C1g—30 to 40 inches; gray (5Y 5/1) silty clay; common coarse distinct mottles of greenish gray (5BG 5/1) and olive (5Y 5/3); massive; firm; medium acid; abrupt smooth boundary.

C2g—40 to 60 inches; gray (5Y 5/1) silty clay; common coarse faint mottles of olive gray (5Y 5/2); massive; firm; medium acid.

Depth to bedrock is generally more than 5 feet. The solum is 25 to 40 inches thick. The soil is commonly free of coarse fragments.

The upper part of the solum is strongly acid or medium acid. The lower part of the solum and the C horizon are medium acid or neutral. Mottles are distinct or prominent in the solum but are less evident or lacking in the C horizon.

Undisturbed soils have a very dark gray (10YR 3/1) or very dark grayish brown (10YR 3/2) A1 horizon underlain by an A2g horizon that has hue of 5Y or 2.5Y, value of 4 or 5, and chroma of 1 or 2. The Ap horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 1 or 2. The B horizon has hue of 5Y or 2.5Y, value of 4 through 6, and chroma of 1 or 2. It ranges from silt loam to silty clay loam in the upper part and silty clay in the lower part. The C horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 1 or 2. It is silty clay loam, silty clay, or clay.

The poorly drained Scantic soils are near the very poorly drained Biddeford soils, the moderately well drained to somewhat poorly drained Buxton soils, and the well drained Suffield soils. All these soils formed in similar sediments.

ScA—Scantic silt loam. This nearly level soil is on plains and on terraces adjacent to natural drainageways. Slopes are dominantly 0 to 3 percent, but they range to as much as about 8 percent.

Included with this soil in mapping are a few small depressional areas occupied by Biddeford soils or a few small knolls occupied by Scio soils or Buxton soils. In some places where this soil is mapped with Hinckley soils or Windsor soils, it has a surface layer of fine

sandy loam 10 to 15 inches thick. In some places, where this soil is mapped in association with Hollis soils or Lyman soils, it is less than 40 inches deep to bedrock.

This soil can be used for hay, pasture, and woodland. When used for cultivated crops, it is limited by wetness and supplemental drainage is needed. Wetness and slow to very slow permeability of the subsoil and underlying material limit the use of this soil. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IVw; woodland group 5w.

Scarboro Series

The Scarboro series consists of deep, very poorly drained, nearly level soils that formed in outwash material on terraces and plains throughout the county.

In a representative profile, in a forested area, the surface layer is 14 inches thick. The upper 4 inches is black mucky peat, and the lower 10 inches is black mucky loamy fine sand. The subsurface layer is gray fine sand 9 inches thick. The underlying material, extending to a depth of 24 inches, is olive gray, loose fine sand that has light gray to gray and olive brown mottles. Below that, to a depth of 60 inches it is olive gray, loose sand that has olive, olive yellow, and light gray to gray mottles.

Permeability is very rapid to rapid below the surface layer. The available water capacity is moderate. The water table is at or near the surface during 10 to 12 months of the year. These soils are usually free of stones.

Scarboro soils are used mainly as woodland.

Representative profile of Scarboro mucky peat, in the town of Wayne, 1,200 feet north of State Route 133, in woodland ½ mile northwest of the intersection with State Route 219:

O2—4 inches to 0; black (10YR 2/1) mucky peat; moderate fine granular structure; many fine roots; strongly acid; abrupt smooth boundary.

A1—0 to 10 inches; black (10YR 2/1) mucky loamy fine sand; moderate fine granular structure; slightly sticky; many roots; strongly acid; clear smooth boundary.

A2g—10 to 19 inches; gray (5Y 5/1) fine sand; single grained; loose; strongly acid; clear smooth boundary.

C1g—19 to 24 inches; olive gray (5Y 5/2) fine sand; common coarse distinct mottles of light gray to gray (5Y 6/1) and olive brown (2.5Y 4/4); single grained; loose; less than 5 percent coarse fragments; strongly acid; clear smooth boundary.

C2g—24 to 60 inches; olive gray (5Y 5/2) sand; common coarse distinct mottles of olive (5Y 5/6), olive yellow (2.5Y 6/6), and light gray to gray (5Y 6/1); single grained; loose; 10 percent coarse fragments; strongly acid.

Depth to bedrock is generally more than 5 feet. Thickness of the solum ranges from 10 to 40 inches. The content of coarse fragments is as much as 10 percent. Reaction ranges from medium acid to very strongly acid throughout the profile.

The O horizon ranges from 4 to 9 inches in thickness. The A1 horizon is very dark gray (N 3/0) or black (10YR 2/1). The A2g horizon is neutral or has hue of 10YR or 5Y, value of 4 through 7, and chroma of 1. It is loamy fine sand to sand. The C horizon has hue of 10YR through 5Y, value of 4 through 6, and chroma of 2 or less. It is loamy sand, fine sand, or sand.

The very poorly drained Scarboro soils are near the excessively drained Hinckley soils and Windsor soils and the moderately well drained Deerfield soils. They are also associated with the Rifle soils, the Togus soils, and the Vassalboro soils that formed in thicker organic deposits.

Sd—Scarboro mucky peat. This nearly level soil is in depressions on outwash terraces and plains. Slopes are mainly 0 to 3 percent.

Included with this soil in mapping are small knolls and ridges that lack the organic surface layer and small depressions where the organic surface layer is up to 16 inches thick. Also included are small areas of Rifle soils, Togus soils, or Vassalboro soils. Some areas mapped with Hinckley soils have gravel in the underlying material.

This soil is suited to woodland and wildlife habitat, and some areas are in bushes and wetland grasses. The water table is near or at the surface during most of the year. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass Vw; woodland group 5w.

Scio Series

The Scio series consists of deep, moderately well drained, gently sloping to sloping soils that formed in lacustrine or marine sediments. These soils are in the wide valleys of the county.

In a representative profile, in a cultivated area, the surface layer is dark grayish brown, very fine sandy loam 8 inches thick. The subsurface layer is light olive brown very fine sandy loam 2 inches thick. The subsoil is 12 inches thick. The upper 3 inches is strong brown, friable very fine sandy loam, and the lower 9 inches is olive, friable silt loam that has light olive gray and gray to light gray mottles. The underlying material to a depth of 60 inches is alternating layers of light olive brown very fine sandy loam and silt loam. It is friable and has yellowish brown, brown, and gray mottles.

Permeability is moderate to moderately slow. The available water capacity is high. These soils are free of stones.

Scio soils are used mainly as woodland and for hay and pasture. Nearly all of these soils have been cultivated at one time.

Representative profile of Scio very fine sandy loam, 3 to 8 percent slopes, in a hayfield in the town of Belgrade, 100 feet west of State Route 135 and 1 mile south of intersection of State Route 27 and State Route 135:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) very fine sandy loam; moderate medium granular structure; many roots; friable; medium acid; abrupt smooth boundary.

A2—8 to 10 inches; light olive brown (2.5Y 5/4) very fine sandy loam; weak medium

granular structure; friable; many roots; medium acid; abrupt broken boundary.

B21—10 to 13 inches; strong brown (7.5YR 5/6) very fine sandy loam; weak medium granular structure; friable; many roots; medium acid; abrupt broken boundary.

B22—13 to 22 inches; olive (5Y 5/3) silt loam that has few medium faint mottles of light olive gray (5Y 6/2) in the upper part and many coarse distinct mottles of gray to light gray (5Y 6/1) in the lower part; moderate medium granular structure; friable; few roots; few yellowish brown (10YR 5/6) round concretions about 2 millimeters in diameter; medium acid; abrupt smooth boundary.

C—22 to 60 inches; light olive brown (2.5Y 5/4) alternating layers of very fine sandy loam and silt loam 1/25 to 3/4 inch thick; many medium distinct mottles of yellowish brown (10YR 5/6), brown (10YR 5/3), and gray (5Y 5/1); massive; friable, firm silt lenses; medium acid.

Depth to bedrock is generally more than 5 feet. The solum is 20 to 30 inches thick. It ranges from medium acid to strongly acid.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. The B horizon ranges from very fine sandy loam to silt loam. Some profiles have thin layers of fine sand, silt loam, and silty clay loam below a depth of 24 inches. The B21 horizon has hue of 7.5YR, 10YR, or 2.5Y; value of 4 or 5; and chroma of 3 through 6. The B22 horizon has hue of 10YR, 2.5Y, or 5Y; value of 4 or 5; and chroma of 3 or 4. Chroma of the mottles ranges from 1 to 6. The C horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 4.

The moderately well drained Scio soils are near the well drained Hartland soils, the moderately well drained to somewhat poorly drained Buxton soils, or the excessively drained Windsor soils. Scio soils are coarser textured than Buxton soils.

SkB—Scio very fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is on terraces adjacent to streams and natural drainageways. It has the profile described as representative of the series.

Included with this soil in mapping are a few areas of Buxton soils, Hartland soils, or Windsor soils, a few small wet areas, or a few areas of soils that have slopes of more than 8 percent. In areas associated with Windsor soils, the surface layer can be sandy loam or fine sandy loam.

This soil is used mainly for hay and pasture but is also suited to cultivated crops and woodland. Because of wetness in spring and during periods of heavy precipitation, drainage is needed if cultivated crops are grown. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIw; woodland group 3o.

SkC2—Scio very fine sandy loam, 8 to 15 percent slopes, eroded. This sloping soil is on side slopes of terraces along drainageways. The profile of this soil differs from the one described as representative of the series in that the surface layer is thinner, there is generally no subsurface layer, and the depth to mottling is greater.

Included with this soil in mapping are a few areas of Buxton soils, Hartland soils, or Windsor soil. Also included are a few small wet areas or a few areas that have slopes of more than 15 percent.

This soil is used mainly for hay, pasture, and woodland but is suited to cultivated crops. If this soil is cultivated, erosion control and drainage are needed. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIIew; woodland group 3r.

Suffield Series

The Suffield series consists of deep, well drained, sloping to steep soils that formed in marine and lacustrine sediments on dissected terraces along the Kennebec River and its tributaries.

In a representative profile, in a cultivated area, the surface layer is dark brown silt loam 6 inches thick. The subsoil is 12 inches thick. The upper 2 inches is yellowish brown, friable silt loam; the next 6 inches is light olive brown, friable silt loam; and the lower 4 inches is dark grayish brown firm silt loam. The underlying material which extends to a depth of 60 inches is olive gray, firm silty clay loam.

Permeability is slow to very slow. The available water capacity is high.

Most areas of these soils were used for hay or pasture but are now idle or are in woodland.

Representative profile of Suffield silt loam, 8 to 15 percent slopes, eroded, in a cultivated field, in the town of Pittston, on the east side of State Route 27, 1¼ miles north of the county line and 400 feet east of Caston school:

Ap—0 to 6 inches; dark brown (10YR 3/3) silt loam; weak fine granular structure; friable; many roots; strongly acid; abrupt smooth boundary.

B21—6 to 8 inches; yellowish brown (10YR 5/6) silt loam; weak fine granular structure; friable; many roots; strongly acid; clear broken boundary.

B22—8 to 14 inches; light olive brown (2.5Y 5/4) silt loam; weak fine granular structure; friable; common roots; strongly acid; clear wavy boundary.

B3—14 to 18 inches; dark grayish brown (2.5Y 4/2) silt loam; strong fine subangular blocky structure; firm; few roots; strongly acid; clear wavy boundary.

IIC—18 to 60 inches; olive gray (5Y 5/2) silty clay loam; strong medium subangular blocky structure; firm; medium acid.

Depth to bedrock is generally more than 5 feet. The soil is free of stones and has less than two percent coarse fragments. Except where the soil has been limed, it is very strongly acid to strongly acid in the surface layer, strongly acid in the subsoil, and medium acid to slightly acid in the C horizon. Thickness of the silty material overlying contrasting more clayey material is 10 to 24 inches.

Undisturbed soils have an A1 horizon that is very dark gray (10YR 3/1) or very dark brown (10YR 2/2). In places an A2 horizon is below the A1 horizon. Most areas have been cultivated at one time and have an Ap horizon that has a hue of 10YR, value of 3 or 4, and chroma of 2 or 3. The B21 horizon has a hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. The B22 horizon and B3 horizon have a hue of 2.5Y or 5Y, value of 3 through 5, and chroma of 2 through 4. The IIC horizon has a hue of 2.5Y or 5Y, value of 3 through 5, and chroma of 2. It is silty clay loam or silty clay.

In Kennebec County the Suffield soils are less deep to contrasting material and more acid in reaction than is described as the range for the Suffield series. These differences do not alter the use or management of the soils.

The well drained Suffield soils are near the moderately well drained to somewhat poorly drained Buxton soils, the poorly drained Scantic soils, and the very poorly drained Biddeford soils. Other soils on the landscape with Suffield soils are the well drained Hartland soils and the excessively drained Hinckley soils and Windsor soils. Unlike the Hartland soils, Suffield soils have contrasting materials of silt loam over silty clay loam or silty clay.

SuC2—Suffield silt loam, 8 to 15 percent slopes, eroded. This sloping soil is adjacent to streams and drainageways. A profile of this soil is described as representative of the series.

Included with this soil in mapping are some areas of Hartland soils and, in small depressional areas and drainageways, a few areas of Scio soils, Buxton soils, or Scantic soils. Short slopes along drainageways are steeper than 15 percent in some places.

Most of this soil is used as woodland, and some of the less sloping areas are used for hay, pasture, and cultivated crops. The hazard of erosion is severe if this soil is cultivated. Steepness of slope limits the use of equipment for cultivated crops and hay. The limitations to the use of this soil for septic tank absorption fields is severely limited by the slow to very slow permeability of the underlying material. Capability subclass IIIe; woodland group 5c.

SuD2—Suffield silt loam, 15 to 25 percent slopes, eroded. This moderately steep soil is adjacent to streams and drainageways.

Included with this soil in mapping are small areas of Hartland soils or Windsor soils and, along intermittent streams at the base of slopes, narrow bands of Scio soils, Buxton soils, or Scantic soils. Also included are areas of Suffield soils that have slopes of less than 15 percent or more than 25 percent.

This soil is used mostly as woodland and permanent bluegrass pasture. It has limitations for cultivated crops. The hazard of erosion is severe. The use of this soil for septic tank absorption fields is severely limited by the slow to very slow permeability of the underlying material and the moderately steep slopes. Capability subclass IVe; woodland group 5c.

SuE2—Suffield silt loam, 23 to 45 percent slopes, eroded. This steep soil is on side slopes along streams and drainageways that have cut deep gullies. Included in mapping are a few areas where slopes are less than 25 percent.

Most of this soil is in woodland. The hazard of erosion is severe, and the use of equipment is severely limited by slope. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIe; woodland group 5c.

Togus Series

The Togus series consists of very poorly drained, nearly level organic soils that formed in a mixture of herbaceous, woody, and sphagnum material underlain by sand at a depth of 16 to 51 inches. These soils are mainly along the shorelines of large lakes and along thoroughfares between lakes where the water level is controlled by dams.

In a representative profile fibrous peat extends to a depth of 36 inches. The upper 7 inches is brown to dark brown, the next 8 inches is dark brown, and the next 21 inches is dark reddish brown. The underlying material, which extends to a depth of 65 inches, is loose strong brown fine sand and sand that has gray, olive, and yellowish red mottles.

The Togus soils are saturated with water more than 10 months of the year and are covered by 6 to 24 inches of water in spring and winter.

Togus soils are used mainly for wildlife habitat.

Representative profile of Togus fibrous peat, in the town of Belgrade, on the west side of Foster Point at the south end of Great Pond, about 300 feet from edge of bog:

Oi1—0 to 7 inches; brown to dark brown (10YR 4/3) fibrous material broken face, brown (10YR 5/3) or light yellowish brown (10YR 6/4) when pressed and rubbed; about 95 percent fiber unrubbed and 90 percent fiber when rubbed; about 60 percent sphagnum moss and 40 percent woody shrubs and reeds; about 30 percent coarse woody fragments; massive; nonsticky; strongly acid; abrupt smooth boundary.

Oi2—7 to 15 inches; dark brown (10YR 3/3) fibrous material broken face, brown (10YR 5/3) when pressed and rubbed; about 95 percent fiber unrubbed and 85 percent fiber when rubbed; about 50 percent sphagnum moss and 20 percent woody fibers and 30 percent herbaceous fibers; massive; nonsticky; held together in a continuous fabric by rhizomes and woody roots; strongly acid; abrupt smooth boundary.

Oi3—15 to 36 inches; dark reddish brown (5YR 2/2) fibrous material broken face, black (5YR 2/1) when pressed; about 80 percent fiber unrubbed and 70 percent fiber when rubbed; about 40 percent mineral soils; 80 percent herbaceous fibers and 20 percent coarse woody fibers; massive; nonsticky; slightly acid; abrupt smooth boundary.

IIC—36 to 65 inches; strong brown (7.5YR 5/6) fine sand and sand; common coarse prominent mottles of gray (5YR 5/1), olive (5Y 5/3), and yellowish red (5YR 4/6); single grained; loose; 5 percent gravel; slightly acid.

Thickness of the organic material is 16 to 51 inches. The surface layer is sphagnum moss less than 18 inches thick in about half of the areas. In other areas it is matted grasses, cattails, reeds, or woody material from shrubs and branches. Thin mineral soil layers 1 to 2 inches thick are common on some bogs. These soils are strongly acid to slightly acid throughout the organic material, and the sandy material ranges from medium acid to slightly acid.

The surface tier varies in color, depending upon the stage of decomposition. Hue ranges from 10YR through 5YR, value is 2 through 6, and chroma is 1 through 4. The lower tiers have hue of 10YR through 5YR, value of 2 through 4, and chroma of 1 through 4. The C horizon has hue of 7.5YR through 5Y, value of 4 through 6, and chroma of 1 through 8. It is very fine sand to sand and is 5 to 10 percent gravel.

The poorly drained Togus, Rifle, and Vassalboro soils formed in similar materials. The organic material of the Togus soil is thinner than that of the Rifle and Vassalboro soils and contains more fiber than that of the Rifle soils.

TO—Togus fibrous peat. This nearly level soil is in depressions. Slopes are less than 2 percent.

Included with this soil in mapping are many areas of soils that show variations in the sequence or degree of decomposition of tiers, and some that have a mineral surface layer.

This soil is used mainly for wildlife habitat. Some areas have a few bog cranberries. Along the edges of this mapping unit, next to the mineral soils, clumps of trees and larger shrubs are common in some places. The major trees are red maple, elm, willow, balsam fir, black spruce, and tamarack. Tree growth is very slow, and this soil is not suited to commercial timber production. Capability subclass VIIw; not in a woodland group.

Vassalboro Series

The Vassalboro series consists of deep, very poorly drained, nearly level organic soils that formed in a mixture of herbaceous, woody, and sphagnum materials. These soils are in large bogs and small potholes in areas of glacial till and on outwash plains throughout the county.

In a representative profile fibrous peat extends to a depth of 65 inches. It is very dark brown in the upper 27 inches, dark reddish brown in the next 18 inches, and dark brown in the lower 20 inches.

These soils are saturated with water almost all the time, and 6 to 12 inches of water ponds on much of the surface for 3 to 6 months of the year.

Vassalboro soils are used mainly for wildlife habitat. Excavated material from a few bogs is used to improve the soils in other areas.

Representative profile of Vassalboro fibrous peat, in Augusta, southeast end of Great Sidney Bog, about 500 feet from Bog Road:

Oi1—0 to 3 inches; very dark brown (10YR 2/2) fibrous material broken face and rubbed; brown to dark brown (10YR 4/3) when pressed; about 95 percent fiber unrubbed and 90 percent fiber when rubbed; about 40 percent sphagnum, 30 percent herbaceous, and 30 percent woody material; massive; nonsticky; matted material, held together with long woody fibers; about 30 percent coarse fragments; very strongly acid; abrupt smooth boundary.

Oi2—3 to 27 inches; very dark brown (10YR 2/2) fibrous material broken face and pressed; about 90 percent fiber unrubbed and 80 percent fiber when rubbed; about 10 percent sphagnum, 40 percent herbaceous, and 50 percent woody fiber material; massive; nonsticky; about 20 percent woody coarse fragments; very strongly acid; clear smooth boundary.

Oi3—27 to 39 inches; dark reddish brown (5YR 2/2) fibrous material broken face, black (5YR 2/1) when pressed and rubbed; about 80 percent fiber unrubbed and 70 percent fiber when rubbed; massive; nonsticky; about 10 percent woody coarse fragments; very strongly acid; gradual smooth boundary.

Oi4—39 to 45 inches; dark reddish brown (5YR 3/2) fibrous material broken face, black (5YR 2/1) when pressed and rubbed; about 80 percent fiber unrubbed and 65 percent fiber when rubbed; massive; nonsticky; about 5 percent coarse woody fragments; very strongly acid; clear smooth boundary.

Oi5—45 to 65 inches; dark brown (7.5YR 3/2) fibrous material broken face, dark reddish brown (5YR 3/2) when pressed and rubbed; about 80 percent fiber unrubbed and 60 percent fiber when rubbed; massive; nonsticky; about 10 percent woody coarse fragments; very strongly acid.

Thickness of the organic tiers exceeds 51 inches. The organic material ranges from 80 percent herbaceous material to 80 percent woody material and layers of both are common at any given site. Coarse woody fragments make up as much as 30 percent of any given tier and average less than 20 percent in the subsurface and bottom tiers. Reaction ranges from extremely acid to very strongly acid throughout.

The surface tier is quite variable in color and degree of decomposition depending on type of vegetation. It has hue of 10YR through 5YR, value of 2 through 6, and chroma of 1 through 4. The lower tiers have hue of 10YR through 5YR, value of 2 through 4, and chroma of 1 through 4. Rubbed colors have about the same range as broken faces. In some profiles, thin layers of hemic or sapric material are within the lower tiers, but the thickness of hemic material is less than 10 inches and thickness of sapric material is less than 5 inches.

The very poorly drained Vassalboro soils, the Rifle soils, and the Togus soils formed in similar material. The organic material of the Vassalboro soils has more

fiber than that of the Rifle soils, and is thicker over mineral soil material than in the Togus soils.

VA—Vassalboro fibrous peat. This nearly level soil is in depressions where the slope is less than 2 percent.

Included with this soil in mapping are small islands of mineral soils. Organic deposits less than 51 inches deep to mineral soil form a band about 50 feet wide around these islands, and bands along the outer edges of the bogs are 50 to 200 feet wide. There is a wide variation between layers in any bog.

Vegetative cover on this soil is dominated by low-growing shrubs and scattered areas of black spruce, tamarack, balsam fir, and white pine. Tree growth is very slow. This soil is used mainly for wildlife habitat. Excavated material from a few bogs is used to improve the soils in other areas. This soil is not suited to commercial timber production. Capability subclass VIIw; not in a woodland group.

Windsor Series

The Windsor series consists of deep, excessively drained, gently sloping to moderately steep soils that formed in glacial outwash deposits. These soils are on terraces and plains throughout the county.

In a representative profile, in a cultivated area, the surface layer is brown to dark brown loamy sand 10 inches thick. The subsoil is very friable loamy sand 19 inches thick. It is brown to dark brown in the upper 1 inch, yellowish brown in the middle 11 inches, and light olive brown in the lower 7 inches. The underlying material to a depth of 60 inches is olive loose sand.

Permeability is very rapid to rapid. The available water capacity is low.

Windsor soils are used mainly as woodland.

Representative profile of Windsor loamy sand, 3 to 8 percent slopes, in a reforested area in the town of Wayne, 1.5 miles south of intersection of Scott Brook and State Route 133, 1,000 feet west of road:

Ap—0 to 10 inches; brown to dark brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many roots; very strongly acid; abrupt smooth boundary.

B21—10 to 11 inches; brown to dark brown (7.5YR 4/4) loamy sand; weak fine granular structure; very friable; many roots; very strongly acid; abrupt broken boundary.

B22—11 to 22 inches; yellowish brown (10YR 5/6) loamy sand; weak fine granular structure; very friable; many roots; very strongly acid; gradual smooth boundary.

B23—22 to 29 inches; light olive brown (2.5Y 5/4) loamy sand; weak fine granular structure; very friable; few roots; very strongly acid; abrupt smooth boundary.

C—29 to 60 inches; olive (5Y 5/3) sand; single grained; loose; strongly acid.

Thickness of the solum is 20 to 32 inches, and depth to bedrock is generally more than 5 feet. The soil is 0 to 5 percent coarse fragments. It ranges from strongly acid to very strongly acid throughout.

The Ap horizon is brown to dark brown (10YR 4/3) or dark yellowish brown (10YR 4/4). In undisturbed areas the A1 horizon is generally very dark grayish brown (10YR 3/2). The B21 horizon has hue of 7.5YR through 2.5Y, value of 4 through 6, and chroma of 4 through 8. The B22 and B23 horizons have hue of 10YR or 2.5Y, value of 5 through 7, and chroma of 2 through 6. The B horizon is loamy sand or loamy fine sand. The C horizon has hue of 2.5Y or 5Y, value of 5 through 7, and chroma of 1 through 4. It is sand or fine sand.

In Kennebec County the Windsor soils have a B21 horizon that is thinner than is described as the range for the Windsor series, but this difference does not alter the use or management of the soils.

The excessively drained Windsor soils are near the moderately well drained Deerfield soils and the very poorly drained Scarboro soils. They are also near the well drained, finer textured Hartland soils and the excessively drained, coarser textured Hinckley soils.

WmB—Windsor loamy sand, 3 to 8 percent slopes. This gently sloping soil is on outwash terraces and plains. It has the profile described as representative of the series.

Included with this soil in mapping are a few small areas of Hartland soils or Hinckley soils and a few small depressional areas occupied by Deerfield soils or Scarboro soils. Also included are soils that have 15 to 35 inches of fine sandy loam, very fine sandy loam, or loam over the underlying sand. A few small areas of Windsor soils that have slopes of less than 3 percent or more than 8 percent are also included.

This soil can be used for woodland, cultivated crops, hay, and pasture. Alfalfa and other deep rooted crops are adapted to this soil. Because of the hazard of erosion and soil blowing, some measures for maintaining fertility and soil moisture are needed if this soil is used for cultivated crops. The limitations to the use of this soil for septic tank absorption fields are slight. Pollution may be a hazard to ground water supplies. Capability subclass IIIs; woodland group 5s.

WmC—Windsor loamy sand, 8 to 15 percent slopes. This sloping soil is on the tops or sides of outwash terraces and plains.

Included with this soil in mapping are small areas that have slopes of less than 8 percent or more than 15 percent. Small areas of Hartland soils, Hinckley soils, or soils that have a surface layer and subsoil of fine sandy loam are also included.

This soil can be used for hay, pasture, cultivated crops, and woodland. Because it is susceptible to water erosion and soil blowing, some measures for maintaining fertility and soil moisture are needed if cultivated crops are grown. The limitations to the use of this soil for septic tank absorption fields are moderate. Pollution may be a hazard to ground water supplies. Capability subclass IVs; woodland group 5s.

WmD—Windsor loamy sand, 15 to 30 percent slopes. This moderately steep soil is on the sides of outwash terraces and plains. It has a profile similar to the one described as representative for the series except the surface layer and upper part of the subsoil are thinner.

Included with this soil in mapping are a few small areas that have slopes of less than 15 percent or more than 30 percent. Small areas of Hartland or Hinckley soils, or soils that have a surface layer and subsoil of fine sandy loam are included.

This soil is too steep and droughty for most uses, but it can be used as woodland and for permanent bluegrass pasture. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIs; woodland group 5s.

Winooski Series

The Winooski series consists of deep, moderately well drained, nearly level soils that formed in alluvium. These soils are on flood plains throughout the county.

In a representative profile, in a cultivated area, the surface layer is very dark grayish brown silt loam 10 inches thick. The underlying material is friable silt loam to a depth of 42 inches. It is dark grayish brown in the upper 8 inches; grayish brown that has gray, light gray to gray, and olive gray mottles in the next 10 inches; and grayish brown that has brown to dark brown, yellow brown, and olive mottles in the next 14 inches. Extending to a depth of 60 inches, it is olive gray, friable very fine sand that has dark reddish brown, dark brown, dark yellowish brown, and light gray to gray mottles.

Permeability is moderate. The available water capacity is high. Flooding is common.

Winooski soils are used mostly for hay, pasture, and woodland. Some areas are used for cultivated crops.

Representative profile of Winooski silt loam, in a cultivated area, in the town of Pittston, 300 feet east of Kennebec River, 500 feet north of Lincoln County line:

Ap—0 to 10 inches; very dark grayish brown (2.5Y 3/2) silt loam; weak fine granular structure; friable; many roots; neutral; abrupt smooth boundary.

C1—10 to 18 inches; dark grayish brown (2.5Y 4/2) silt loam; weak fine granular structure; friable; few roots; medium acid; abrupt smooth boundary.

C2—18 to 28 inches; grayish brown (2.5Y 5/2) silt loam; many coarse distinct mottles of gray (5Y 5/1), light gray to gray (5Y 6/1), and olive gray (5Y 5/2) that are surrounded by brown to dark brown (7.5YR 4/4) rings; weak fine granular structure; friable; few roots; medium acid; gradual smooth boundary.

C3—28 to 42 inches; grayish brown (2.5Y 5/2) silt loam; many coarse prominent mottles of brown to dark brown (7.5YR 4/4) and yellowish brown (10YR 5/6) and many coarse distinct mottles of olive (5Y 5/3); massive; friable; medium acid; abrupt smooth boundary.

IIC4—42 to 60 inches; olive gray (5Y 5/2) very fine sand; common coarse prominent mottles of dark reddish brown (5YR 3/3), dark brown (7.5YR 3/2), dark yellowish brown (10YR 4/4), and light gray to gray (10YR 6/1); massive; friable; medium acid.

Depth to bedrock is generally more than 5 feet. Reaction ranges from very strongly acid through neutral in the upper part of the soil and from medium acid through neutral in the lower part.

The Ap horizon has hue of 10YR through 5Y, value of 2 through 4, and chroma of 2. The C horizon has hue of 10YR through 5Y, value of 3 through 5, and chroma of 2 through 4. The C horizon is generally silty loam or very fine sandy loam to a depth of 40 inches, but loamy very fine sand is within the range. Below a depth of 40 inches it is silt loam, very fine sand, or sand. Depth to distinct or prominent mottling ranges from 15 to 20 inches.

The moderately well drained Winooski soils are near the well drained Hadley soils, the poorly drained Limerick soils, and the very poorly drained Saco soils.

Wn—Winooski silt loam. This nearly level soil is along the larger streams and rivers throughout the county. Slopes are mainly 0 to 3 percent.

Included with this soil in mapping are a few small areas of Hadley soils, Limerick soils, or Saco soils. Included small very poorly drained areas are indicated on the soil map by wet spot symbols.

This soil is suited to hay, pasture, woodland, and cultivated crops. It is subject to flooding and has a seasonal high water table that limits many uses unless drainage is provided. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIw; woodland group 3o.

Woodbridge Series

The Woodbridge series consists of deep, moderately well drained, gently sloping to sloping soils that formed in glacial till. These soils are on hills and ridges throughout the county.

In a representative profile, in a cultivated area, the surface layer is brown to dark brown fine sandy loam 7 inches thick. The subsoil is friable fine sandy loam 15 inches thick. It is strong brown in the upper 7 inches, light olive brown in the next 3 inches, and grayish brown that has yellowish brown and red mottles in the lower 5 inches. The underlying material to a depth of 60 inches is firm fine sandy loam that has yellowish brown and yellowish red mottles. It is light olive brown and dark grayish brown in the upper 11 inches and olive in the lower part.

Permeability is moderately slow to slow. The available water capacity is moderate. These soils are naturally stony, but most areas have been cleared of stones for cultivation.

Woodbridge soils are used mainly for hay, pasture, and woodland, but a few areas are used for cultivated crops.

Representative profile of Woodbridge fine sandy loam, 3 to 8 percent slopes, in a cultivated field at Kents Hill in the town of Readfield, on north side of State Route 17, 50 feet from road, 2,100 feet west of State Route 41 intersection:

Ap—0 to 7 inches; brown to dark brown (10YR 4/3) fine sandy loam; moderate medium granular structure; friable; many roots; 5 percent coarse fragments; medium acid; abrupt smooth boundary.

B21—7 to 14 inches; strong brown (7.5YR 5/6) fine sandy loam; weak fine granular structure; friable; many roots; 10 percent coarse fragments; medium acid; clear broken boundary.

B22—14 to 17 inches; light olive brown (2.5Y 5/4) fine sandy loam; weak fine granular structure; friable; many roots; 10 percent coarse fragments; medium acid; abrupt smooth boundary.

B23—17 to 22 inches; grayish brown (2.5Y 5/2) fine sandy loam; common medium prominent mottles of yellowish brown (10YR 5/6) and red (2.5YR 5/8); weak medium platy structure; friable; many roots; 18 percent coarse fragments; medium acid; clear wavy boundary.

C1x—22 to 33 inches; light olive brown (2.5Y 5/4) outside and dark grayish brown (2.5Y 4/2) inside peds; fine sandy loam; many medium prominent mottles of yellowish brown (10YR 5/8) and yellowish red (5YR 4/8); strong thin platy structure; firm, brittle; sand coatings on peds and tops of prisms at the bottom of this horizon; 15 percent coarse fragments; medium acid; clear wavy boundary.

C2x—33 to 60 inches; olive (5Y 5/3) fine sandy loam; common fine prominent mottles of yellowish brown (10YR 5/6) and yellowish red (5YR 4/8); strong very coarse prismatic structure parting to strong medium platy; firm, brittle; rotten schistose rock fragments and manganese stains; 15 percent coarse fragments; medium acid.

Depth to bedrock is generally more than 5 feet. Depth to fragipan ranges from 18 to 30 inches. The soil is 5 to 30 percent coarse fragments. It ranges from strongly acid to medium acid except in cultivated areas where limed.

In undisturbed areas the A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. The B21 horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 through 8. The B22 horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 through 6. The B horizon is generally fine sandy loam or loam, but ranges to sandy loam and the gravelly analogs of those textures. Distinct or prominent mottles are in the lower part of the B horizon. The Cx horizon has hue of 2.5Y, value of 5 or 6, and chroma of 2 or 4 or a hue of 5Y, value of 4 or 5, and chroma of 2 through 4. It is fine sandy loam or loam and the gravelly analogs of those textures. The Cx horizon is firm or very firm and has the brittleness characteristic of a fragipan.

The moderately well drained Woodbridge soils are near the well drained Charlton soils and Paxton soils, the somewhat excessively drained Hollis soils, and the poorly drained Ridgebury soils.

WrB—Woodbridge fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is on the tops or sides of hills and ridges and in some depressions. It has the profile described as representative for the series. This soil has been cleared of surface stones.

Included with this soil in mapping are a few small areas of Charlton soils, Hollis soils, Paxton soils, or Ridgebury soils. Some included areas have slopes of more than 8 percent, and a few included areas lack a fragipan.

This soil is suited to hay, pasture, woodland, and cultivated crops. Wetness and moderately slow to slow permeability in the fragipan are the major limitations to the use of this soil. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIw; woodland group 3o.

WrC—Woodbridge fine sandy loam, 8 to 15 percent slopes. This sloping soil is on the sides of ridges. It has a profile similar to the one described as representative of the series, except it has a thinner solum. This soil has been cleared of surface stones.

Included with this soil in mapping are a few small areas of Charlton soils, Hollis soils, Paxton soils, or Ridgebury soils. Also included are areas of soils that have slopes of less than 8 percent or more than 15 percent or soils that lack a fragipan.

This soil is suited to hay, pasture, woodland, and cultivated crops. Wetness, slope, and moderately slow to slow permeability in the fragipan limit the use of this soil. Some measures for controlling erosion and providing supplemental drainage are needed if cultivated crops are grown. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass IIIew; woodland group 3o.

WsB—Woodbridge very stony fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is on the tops or sides of hills or ridges. Stones cover as much as 3 percent of the surface.

Included with this soil in mapping are small areas of Woodbridge soils that have more than 3 percent of the surface covered by stones or a few areas that have slopes of more than 8 percent. Also included are small areas of Charlton soils, Hollis soils, Paxton soils, or Ridgebury soils and soils that lack a fragipan.

This soil is used mainly for woodland, and it is suited to this use. It is also suited to permanent bluegrass pasture. It is poorly suited to cultivated crops and hay because of wetness and stoniness. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIs; woodland group 3o.

WsC—Woodbridge very stony fine sandy loam, 8 to 15 percent slopes. This sloping soil is on the sides of ridges. Stones cover as much as 3 percent of the surface.

Included with this soil in mapping are small areas of Woodbridge soils that have slopes of less than 8 percent or more than 15 percent. Also included are small areas of Charlton soils, Hollis soils, Paxton soils, or Ridgebury soils and areas of soils that lack a fragipan. In a few areas, stones cover more than 3 percent of the surface.

This soil is used mainly as woodland and is suited to this use. It is also suited to permanent bluegrass pasture. It is poorly suited to cultivated crops and hay because of stones, wetness, and slope. The limitations to the use of this soil for septic tank absorption fields are severe. Capability subclass VIs; woodland group 3o.

Use and Management of Soils

This section explains the system of capability classifi-

cation used by the Soil Conservation Service and gives the estimated yields of the principal crops and pasture grasses grown in the county. It also contains information on the use and management of the soils of the county for woodland, wildlife, engineering, recreation, and land use planning. To determine the capability classification of a given soil, refer to the "Guide to Mapping Units" at the back of this survey. The use and management of individual soils for crops and pasture are discussed in the section "Description of the Soils" rather than by capability units. In the section on woodland, a table lists the woodland group into which the soils have been placed. The section on wildlife gives information concerning the suitability of the soils to produce food or cover for wildlife habitat. In the section on engineering, the soils are not grouped but are placed in tables so that properties significant to engineering work can be seen readily. In the section "Recreational Development," the soils are rated according to their limitations for selected recreational uses. In the section "Land Use Planning," the soils are rated according to their limitations for selected nonfarm uses.

Capability Grouping

Some readers, particularly those who farm on a large scale, may find it practical to use and manage some of the different kinds of soil on their farm alike. These readers can make good use of the capability classification system, which is a grouping that shows, in a general way, the suitability of soils for most kinds of farming.

The grouping is based on permanent limitations of soils when used for field crops, the risk of damage when they are farmed, and the way the soils respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; the grouping does not take into consideration possible but unlikely major reclamation projects; and it does not apply to rice, cranberries, horticultural crops, or other crops that require special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations for farms, woodland, or for engineering uses.

CAPABILITY CLASSES, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use, defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife.

Class VI soils have severe limitations that make them generally unsuited to cultivated crops and limit their use largely to pasture or range, woodland, or wildlife.

Class VII soils have very severe limitations that make them unsuited to cultivated crops and that restrict their use largely to pasture or range, woodland, or wildlife.

Class VIII soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, water supply, or to esthetic purposes.

CAPABILITY SUBCLASSES are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by supplemental drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by *w*, *s*, and *c*, because the soils in this class are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, range, woodland, wildlife, or recreation.

In this survey area some of the soils are assigned to two subclasses. For example, Ridgebury very stony fine sandy loam is in capability subclass VIIsw. This indicates that use of the soil is mainly limited by stoniness and wetness.

CAPABILITY UNITS are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe–4 or IIIe–6. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within each subclass.

In this survey area the soils are assigned only to subclasses and are not assigned to capability units. The use and management of the soils is discussed in the descriptions of the mapping units.

Estimated Yields

Table 2 shows the estimated average yield per acre of the principal crops and pasture plants of Kennebec County under two levels of management. In any given year, yields may be higher or lower than the average

TABLE 2.—*Estimated average yield per acre*

[Columns A show yields to be expected under ordinary management; columns B show yields to be expected under improved management. Absence of a figure indicates that the soil is not suited to the crop or the crop is not commonly grown on it. The soils generally not used for crops or pasture are not listed.]

Soil	Corn silage		Potatoes		Hay						Pasture of tall grasses and legumes		Apples	
					Alfalfa		Grass and legumes		Grass					
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Tons	*Tons*	*Cwt*	*Cwt*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*AUM* [1]	*AUM* [1]	*Bu*	*Bu*
Berkshire fine sandy loam, 3 to 8 percent slopes	12	22	225	330	2.5	4.5	2.5	4.0	2.5	4.0	4.5	8.5	550	750
Berkshire very stony fine sandy loam, 3 to 8 percent slopes													550	750
Berkshire very stony fine sandy loam, 8 to 15 percent slopes													550	750
Buxton silt loam, 3 to 8 percent slopes, eroded	14	22			1.5	3.5	2.0	3.5	2.5	4.5	4.0	6.5		
Buxton silt loam, 8 to 15 percent slopes, eroded		20			1.5	3.5	2.0	3.5	2.5	4.5	4.0	6.5		
Deerfield loamy fine sand, 0 to 8 percent slopes		16			1.5	3.5	1.5	3.0	1.5	3.0		6.5		
Hadley silt loam	12	28	240	360	2.5	5.0	2.0	4.5	2.0	4.5	4.5	8.5		
Hartland very fine sandy loam, 8 to 15 percent slopes	12	26	180	360	2.5	4.5	2.0	4.0	2.0	4.5	5.5	8.5		
Hartland very fine sandy loam, 15 to 25 percent slopes					2.0	4.0	2.0	3.5	2.0	4.0	4.5	7.5		
Hinckley gravelly sandy loam, 3 to 8 percent slopes		12				2.5		2.0			3.0	5.0		
Hollis fine sandy loam, 3 to 8 percent slopes	12	15			2.0	3.5	1.5	3.0	1.5	2.5	4.0	6.5		450
Hollis fine sandy loam, 8 to 15 percent slopes	12	14			1.5	3.0	1.5	2.5	1.5	2.0	4.0	5.5		450
Limerick silt loam	14	20					1.5	3.5	1.5	4.0	3.0	6.5		
Lyman loam, 3 to 8 percent slopes	10	14			1.0	3.0	1.0	2.5	1.0	2.0	3.5	5.5		450
Lyman loam, 8 to 15 percent slopes	10	12			1.0	3.0	1.0	2.5	1.0	2.0	3.5	5.5		450
Monarda silt loam		14					2.0	3.0	2.0	3.0	4.0	5.5		
Paxton fine sandy loam, 3 to 8 percent slopes	14	24	210	330	2.5	4.5	2.0	4.0	2.0	4.0	5.5	8.5	550	1,000
Paxton fine sandy loam, 8 to 15 percent slopes	12	22	210	300	2.5	4.5	2.0	4.0	2.0	4.0	5.5	8.5	550	1,000
Paxton very stony fine sandy loam, 3 to 8 percent slopes													450	750
Paxton very stony fine sandy loam, 8 to 15 percent slopes													450	750
Paxton-Charlton fine sandy loams, 3 to 8 percent slopes	14	24	210	330	2.5	4.5	2.0	4.0	2.0	4.0	5.5	8.5	550	1,000
Paxton-Charlton fine sandy loams, 8 to 15 percent slopes, eroded	12	22	210	300	2.5	4.5	2.0	4.0	2.0	4.0	5.5	8.5	550	1,000
Paxton-Charlton fine sandy loams, 15 to 25 percent slopes, eroded	10	20			2.5	4.0	2.0	3.5	2.0	3.5	5.0	7.5	300	450
Paxton-Charlton very stony fine sandy loams, 3 to 8 percent slopes													450	750
Paxton-Charlton very stony fine sandy loams, 8 to 15 percent slopes													450	750
Peru fine sandy loam, 3 to 8 percent slopes	14	20	180	270	1.5	4.0	2.0	4.0	2.5	4.0	5.5	8.0	300	500
Peru very stony fine sandy loam, 3 to 8 percent slopes													300	500
Peru very stony fine sandy loam, 8 to 15 percent slopes													300	500
Ridgebury fine sandy loam		16					2.0	3.5	2.5	4.0	4.5	6.5		
Scantic silt loam		16					2.0	3.0	2.5	3.5	4.5	6.0		
Scio very fine sandy loam, 3 to 8 percent slopes	14	24			2.5	4.5	2.5	4.0	1.5	4.5	5.0	8.5		
Scio very fine sandy loam, 8 to 15 percent slopes, eroded	12	22			2.0	4.0	2.0	3.5	1.5	4.0	5.0	8.5		
Suffield silt loam, 8 to 15 percent slopes, eroded	12	20			2.0	4.0	2.0	3.0	1.5	3.0	5.0	7.5		
Windsor loamy sand, 3 to 8 percent slopes		14				3.0		2.5		2.0	3.5	5.5		
Windsor loamy sand, 8 to 15 percent slopes		12				3.0		2.5		2.0	3.0	5.5		
Winooski silt loam	12	26	180	330	2.0	4.5	2.0	4.0	2.0	4.0	5.0	7.5		
Woodbridge fine sandy loam, 3 to 8 percent slopes	14	24	180	270	1.5	4.0	2.0	4.0	2.5	4.0	5.5	8.0	300	500
Woodbridge fine sandy loam, 8 to 15 percent slopes	12	22	180	240	1.5	4.0	2.0	4.0	2.5	4.0	5.5	8.0	300	500

See footnote at end of table.

TABLE 2.—*Estimated average yield per acre*—Continued

Soil	Corn silage		Potatoes		Hay						Pasture of tall grasses and legumes		Apples	
					Alfalfa		Grass and legumes		Grass					
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Woodbridge very stony fine sandy loam, 3 to 8 percent slopes													300	500
Woodbridge very stony fine sandy loam, 8 to 15 percent slopes													300	500

[1] AUM is animal-unit-month, a term used to express the carrying capacity of pasture. It is the number of animal units per acre a pasture can carry each month without injury to the sod. An acre of pasture that provides 1 month of grazing for 1 cow or horse, 5 hogs, or 7 sheep has a carrying capacity of 1 animal-unit-month.

because of varying weather conditions and varying management practices. The estimates are based on experiments made by the Department of Plant and Soil Sciences at the University of Maine and on field observations made by people who have had experience with the crops and soils of this county.

The figures in columns A of table 2 represent yields obtained in an average growing season under the management followed by most farmers in the area. Crop yields from the records of farmers and others were used as a basis for these estimates.

The figures in columns B of table 2 represent yields that can be expected in a favorable growing season and under improved, or high level, management. This level of management includes applying lime and fertilizer in amounts indicated by soil tests; using a good cropping system; managing crop residue well; disposing of excess water; controlling runoff and erosion; controlling weeds, brush, diseases, and insects; preparing the seedbed properly; and selecting crop varieties suited to the soil and to Kennebec County.

The soils not listed in table 2 generally are not used for crops or tall grass and legume pasture.

Woodland [2]

About three-quarters of Kennebec County is wooded. This vast area, intermittently broken by farmsteads and recreational and urban areas, provides the basic raw products for employment of many people and contributes materially to the economy of the area.

The woods of Kennebec County are well stocked with desirable kinds of trees. Information pertaining to soil-woodland capability and woodland management is given in table 3.

The well-stocked woodlands provide sufficient raw materials for varied wood industries. There are several commercial sawmills specializing in pine and hemlock building materials, bolter mills using birch and maple, and mills specializing in pallet production and in furniture stock. Several pulp mills in or near Kennebec County provide excellent markets for virtually all species and sizes of wood.

[2] RICHARD ARBOUR, district forester, State of Maine Bureau of Forestry, and LEWIS P. BISSELL, forestry specialist, Cooperative Extension Service, helped prepare this section.

Six broad forest types prevail throughout the county. White pine is the most important commercial species. Conditions for growth are good in the central and southern areas. About 25 percent of the wooded area is in the white pine-red pine-hemlock forest types. Northern hardwood, consisting mainly of birch, beech, and maple, is also an important forest type and covers approximately 12 percent of the wooded area. Other hardwoods in the elm-ash-red maple and the aspen-birch forest type cover approximately 29 percent of the area.White pine-red oak forest type make up about 6 percent of the area and is in the eastern and southern part. The spruce and balsam fir forest type is predominant in the northern area and in low-lying areas of organic soils. About 28 percent of the wooded area in the county is in this forest type.

The soils of Kennebec County have been grouped into classes and subclasses to assist owners in planning the use of their soils for forest crops. Each group is made up of the soils that are suited to similar kinds of trees, that have the same potential production, and that have similar soil features affecting management. Biddeford mucky peat (Bo), Rifle mucky peat (RF), Saco soils (SA), Togus fibrous peat (TO), and Vassalboro fibrous peat (VA) are unsuited to commercial timber production and have not been placed in woodland groups.

The groups are identified by a two-part symbol, such as 3o, 4r, or 5s. The first number in the symbol indicates the woodland productivity class. There are six classes. Soils in class 1 have the highest potential productivity, and those in class 6, the lowest. Maine, however, is too far north to have soils that qualify for classes 1 or 2. Thus, a soil in class 3 is considered to have an excellent site quality in Maine and soils in classes 4, 5, and 6, to have good, fair, and poor quality, respectively. The soils are placed in productivity classes on the basis of measured site indexes. For those soils on which site indexes were not available, the productivity class was estimated on the basis of data obtained for similar soils throughout the New England States.

The second part of the symbol identifying a group is a lower case letter *x*, *w*, *d*, *c*, *s*, *r*, or *o*. Priority in placing each kind of soil into a subclass must be in the order that the letters are listed above. Except for the letter *o*, the lower case letter indicates an important soil property that imposes a hazard or limitation in managing

the soils of the group for trees. The letter *x* means the main limitation is stones or rocks. The letter *w* means excessive wetness, either seasonal or all year. The letter *d* means a restricted rooting depth. The letter *c* stands for limitations because of the kind or amount of clay in the upper part of the soil profile. The letter *s* indicates dry, unstable, abrasive, sandy soils that have little or no difference in texture between the surface layer and subsoil. The letter *r* shows that the main limitation is steep slopes and that there is a hazard of erosion and possibly a limitation to use of equipment. The letter *o* shows that the soils have slight or no limitations that restrict their use for trees.

For each group listed in table 3, the estimated site index and site quality are given for white pine, spruce and fir, and northern hardwoods. Also shown are the trees generally preferred in the management of existing stands and for planting. Hazards and limitations that affect management are also rated in this table. The terms used in table 3 are explained in the following paragraphs.

A site index for a given soil is the height, in feet, that dominant and co-dominant trees will reach in 50 years. The site indexes for the groups were estimated and are given as a range in table 3, for example, 70–80. For white pine, the site indexes were based on data collected in Maine and New Hampshire by the Maine Forest Service, the New Hampshire Extension Service, and the Soil Conservation Service; those for white spruce and balsam fir were calculated by using data obtained in Maine, New Hampshire, and Vermont by the Maine Forest Service, the Vermont Forest Service, and the New Hampshire Extension Service; and for northern hardwoods, the site indexes were based on studies made in Vermont by the Vermont Forest Service and the Soil Conservation Service.

The trees that are preferred in managing the existing stands and trees preferred for planting are not listed in order of preference in table 3. Other plants that are not listed may be suited to the soils in the woodland group. The trees listed as preferred for planting in a woodland group are suited to those soils and have been successfully planted on them. These trees are suitable for wood crops.

The soil properties that affect management are expressed in degree of limitation. These limitations and hazards are shown as slight, moderate, or severe and are explained in the following paragraphs.

Erosion hazard refers to the potential hazard of soil losses in common woodland management. The hazard is *slight* if expected soil losses are small; *moderate,* if some soil losses are expected and care is needed during logging and road construction to reduce soil losses; and *severe,* if special methods of operation are necessary for preventing excessive soil losses.

Equipment limitations depend on soil characteristics that restrict or prohibit the use of harvesting equipment, either seasonally or continually. *Slight* means no restriction in the kind of equipment or time of year it is used; *moderate* means that use of equipment is restricted for 3 months of the year or less; *severe* means that special equipment is needed and that its use is severely restricted for more than 3 months of the year.

Seedling mortality refers to mortality of naturally occurring or planted tree seedlings, as influenced by kinds of soil or topographic conditions when plant competition is assumed not to be a factor. *Slight* indicates a loss of 0 to 25 percent; *moderate* indicates a loss of 25 to 50 percent; and *severe* indicates a loss of more than 50 percent of the seedlings.

Plant competition is the degree to which undesirable plants invade openings in the tree canopy. Hardwoods and conifers are rated separately in table 3. *Slight* means that plant competition does not prevent adequate natural regeneration and early growth or does not interfere with seedling development; *moderate* means that competition delays natural or artificial establishment and growth rate, but does not prevent the development of fully stocked normal stands; *severe* means that competition prevents adequate natural or artificial regeneration, unless the site is prepared properly and maintenance practices are used.

Windthrow hazard depends on the soil characteristics that enable trees to resist being blown down by wind. *Slight* means that most trees withstand the wind; *moderate* means that some trees are expected to blow down during excessive wetness and high wind; *severe* means that many trees are expected to blow down during periods when the soil is wet and when winds are moderate or high.

Wildlife[3]

The abundance of wildlife depends largely on the amount and distribution of food, shelter, and water. If any of these elements is missing, inadequate, or inaccessible, wildlife is absent or scarce. The kind and abundance of wildlife that live in a given area are closely related to land use, to the resulting kinds and patterns of vegetation, and to the supply and distribution of water. These, in turn, are generally related to the kinds of soils.

Habitat for wildlife normally can be created or improved by planting suitable vegetation, by properly managing the existing plant cover, by fostering the natural establishment of desirable plants, or by using a combination of these measures.

In table 4 the soils of Kennebec County are rated according to their suitability for seven elements of wildlife habitat and for three general kinds of wildlife habitat. The elements and general kinds of wildlife habitat are defined and the ratings explained in the paragraphs that follow.

The suitability ratings in this section can be used to help—

1. Plan the broad use of parks, refuges, nature-study areas, and other recreational developments for wildlife habitat.
2. Select the better soils for creating, improving, or maintaining specific kinds of wildlife habitat elements.
3. Determine the relative intensity of soil management needed for individual habitat elements.
4. Eliminate soils that would be difficult or not

[3] ROBERT J. WENGRZYNEK, JR., biologist, Soil Conservation Service, helped prepare this section.

TABLE 3.—

[Soils that are not suited to commercial

Soil series and map symbols	Woodland group	White pine		Spruce and fir[1]		Northern hardwoods[2]	
		Condition of site	Site index	Condition of site	Site index	Condition of site	Site index
Berkshire: BhB, BkB, BkC	3o	Excellent	70–80	Excellent	60–70	Excellent	59–66
BkD	3r	Excellent	70–80	Excellent	60–70	Excellent	59–66
Buxton: BuB2	4o	Good	60–70	Good	50–60	Good	52–59
BuC2	4r	Good	60–70	Good	50–60	Good	52–59
Deerfield: DeB	4o	Good	60–70	Good	50–60	Good	52–59
Hadley: Ha	3o	Excellent	70–80	Excellent	60–70	Excellent	59–66
Hartland: HfC	3r	Excellent	70–80	Excellent	60–70	Excellent	59–66
HfD	3r	Excellent	70–80	Excellent	60–70	Excellent	59–66
Hinckley: HkB, HkC	5s	Fair	50–60	Fair	40–50	Fair	45–52
HkD	5s	Fair	50–60	Fair	40–50	Fair	45–52
Hollis: HrB, HrC	5d	Fair	50–60	Fair	40–50	Fair	45–52
HrD	5d	Fair	50–60	Fair	40–50	Fair	45–52
HtB, HtC, HtD	5x	Fair	50–60	Fair	40–50	Fair	45–52
Limerick: Lk	4w	Good	60–70	Good	50–60	Good	52–59
Lyman: LyB, LyC	4d	Fair	50–60	Good	50–60	Fair	45–52
LyD	4d	Fair	50–60	Good	50–60	Fair	45–52
LzC	4x	Fair	50–60	Good	50–60	Fair	45–52

See footnotes at end of table.

Woodland

production are not listed]

Trees preferred—		Factors affecting management					
In existing stands	For planting [3]	Erosion hazard	Equipment limitations	Seedling mortality	Plant competition for—		Windthrow hazard
					Hardwoods	Conifers	
White pine, spruce, northern hardwoods, upland oaks, balsam fir.	White pine, white spruce, red pine, larches.	Slight	Slight	Slight	Slight	Moderate	Slight.
White pine, spruce, northern hardwoods, upland oaks, balsam fir.	White pine, white spruce, red pine, larches.	Slight	Moderate	Slight	Slight	Moderate	Slight.
White pine, spruce, northern hardwoods, balsam fir, hemlock.	White pine, white spruce.	Slight	Slight	Slight [4]	Slight	Moderate	Slight.
White pine, spruce, northern hardwoods, balsam fir, hemlock.	White pine, white spruce.	Moderate	Moderate	Slight [4]	Slight	Moderate	Slight.
White pine, red pine, northern hardwoods, upland oaks.	White pine, red pine.	Slight	Slight	Slight	Slight	Moderate	Slight.
White pine, spruce, northern hardwoods, upland oaks.	White pine, larches.	Slight	Slight	Slight	Slight	Moderate	Slight.
White pine, spruce, northern hardwoods, upland oaks, balsam fir.	White pine, white spruce, red pine, larches.	Moderate	Slight	Slight	Slight	Moderate	Slight.
White pine, spruce, northern hardwoods, upland oaks, balsam fir.	White pine, white spruce, red pine, larches.	Severe	Moderate	Slight	Slight	Moderate	Slight.
White pine, red pine, northern hardwoods, upland oaks.	White pine, red pine.	Slight	Slight	Severe	Slight	Slight	Slight.
White pine, red pine, northern hardwoods, upland oaks.	White pine, red pine.	Slight	Moderate	Severe	Slight	Slight	Slight.
White pine, spruce	White pine, white spruce.	Slight	Slight	Severe	Slight	Slight	Moderate.
White pine, spruce	White pine, white spruce.	Slight	Moderate	Severe	Slight	Slight	Moderate.
White pine, spruce	White pine, white spruce.	Slight	Moderate	Severe	Slight	Slight	Moderate.
White pine, spruce, red maple, northern white-cedar.	White pine, white spruce.	Slight	Severe	Severe	Severe	Severe	Severe.
Balsam fir, spruce, northern hardwoods.	White pine, white spruce.	Slight	Slight	Severe	Slight	Slight	Moderate.
Balsam fir, spruce, northern hardwoods.	White pine, white spruce.	Slight	Moderate	Severe	Slight	Slight	Moderate.
Balsam fir, spruce, northern hardwoods.	White pine, white spruce	Slight	Moderate	Severe	Slight	Slight	Moderate.

TABLE 3.—

Soil series and map symbols	Woodland group	White pine		Spruce and fir [1]		Northern hardwoods [2]	
		Condition of site	Site index	Condition of site	Site index	Condition of site	Site index
Monarda: MoA, MrA	4w	Good	60–70	Good	50–60	Good	52–59
Paxton: PbB, PbC, PcB, PcC, PdB, PdC2, PeB, PeC.	3o	Excellent	70–80	Excellent	60–70	Excellent	59–66
PcD, PdD2, PeD	3r	Excellent	70–80	Excellent	60–70	Excellent	59–66
Peru: PfB, PkB, PkC	3o	Excellent	70–80	Excellent	60–70	Good	52–59
Ridgebury: RcA, RdA	4w	Good	60–70	Good	50–60	Good	52–59
Scantic: ScA	5w	Fair	50–60	Fair	40–50	Fair	45–52
Scarboro: Sd	5w	Fair	50–60	Fair	40–50	Fair	45–52
Scio: SkB	3o	Excellent	70–80	Excellent	60–70	Good	52–59
SkC2	3r	Excellent	70–80	Excellent	60–70	Good	52–59
Suffield: SuC2	5c	Fair	50–60	Fair	40–50	Fair	45–52
SuD2, SuE2	5c	Fair	50–60	Fair	40–50	Fair	45–52
Windsor: WmB, WmC	5s	Fair	50–60	Fair	40–50	Fair	45–52
WmD	5s	Fair	50–60	Fair	40–50	Fair	45–52
Winooski: Wn	3o	Excellent	70–80	Excellent	60–70	Good	52–59
Woodbridge: WrB, WrC, WsB, WsC	3o	Excellent	70–80	Excellent	60–70	Good	52–59

[1] Spruces include white spruce, black spruce, and red spruce. Fir refers to balsam fir.
[2] Northern hardwoods include sugar maple, white ash, white birch, and yellow birch.
[3] Larches include European larch and Japanese larch.

Woodland—Continued

Trees preferred—		Factors affecting management					
In existing stands	For planting [3]	Erosion hazard	Equipment limitations	Seedling mortality	Plant competition for—		Windthrow hazard
					Hardwoods	Conifers	
White pine, spruce, balsam fir.	White pine, white spruce.	Slight	Severe	Severe	Severe	Severe	Severe.
White pine, spruce, northern hardwoods, upland oaks.	White pine, white spruce, larches.	Slight	Slight	Slight	Slight	Moderate	Slight.
White pine, spruce, northern hardwoods, upland oaks.	White pine, white spruce, larches.	Slight	Moderate	Slight	Slight	Moderate	Slight.
White pine, spruce, northern hardwoods, upland oaks, balsam fir.	White pine, white spruce, larches.	Slight	Slight	Slight	Slight	Moderate	Slight.
White pine, spruce, balsam fir, northern white-cedar.	White pine, white spruce.	Slight	Severe	Severe	Slight	Severe	Severe.
White pine, spruce, balsam fir, northern white-cedar.	White pine, white spruce.	Slight	Severe	Severe	Severe	Severe	Severe.
White pine, spruce, red maple.	Generally not feasible to plant.	Slight	Severe	Severe	Moderate	Moderate	Severe.
White pine, spruce, northern hardwoods, upland oaks, balsam fir.	White pine, white spruce, red pine, larches.	Slight	Slight	Slight [4]	Slight	Moderate	Slight.
White pine, spruce, northern hardwoods, upland oaks, balsam fir.	White pine, white spruce.	Moderate	Slight	Slight [4]	Slight	Moderate	Slight.
White pine, spruce, northern hardwoods, hemlock.	White pine, white spruce, red pine, larches.	Moderate	Moderate	Moderate	Slight	Slight	Moderate.
White pine, spruce, northern hardwoods, hemlock.	White pine, white spruce.	Severe	Severe	Moderate	Slight	Slight	Moderate.
White pine, red pine, northern hardwoods, upland oaks.	White pine, red pine.	Slight	Slight	Severe	Slight	Slight	Slight.
White pine, red pine, northern hardwoods, upland oaks.	White pine, red pine.	Slight	Moderate	Severe	Slight	Slight	Slight.
White pine, spruce, northern hardwoods, upland oaks.	White pine, larches.	Slight	Slight	Slight	Slight	Moderate	Slight.
White pine, spruce, northern hardwoods, upland oaks, balsam fir.	White pine, white spruce, larches.	Slight	Slight	Slight	Slight	Moderate	Slight.

[4] Frost heaving may result in moderate seedling mortality.
[5] The Charlton parts of PdB, PdC2, PdD2, PeB, PeC, and PeD are rated the same as the Paxton parts.

TABLE 4.—*Wildlife*

Soil series and map symbols	Elements of wildlife habitat							
	Grain and seed crops	Domestic grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland
Berkshire:								
BhB	Fair	Good	Good	Good	Good	Poor	Very poor	Good
BkB	Very poor	Poor	Good	Good	Good	Poor	Very poor	Poor
BkC, BkD	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor
Biddeford: Bo	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor
Buxton:								
BuB2	Fair	Good	Good	Good	Good	Poor	Very poor	Good
BuC2	Fair	Good	Good	Good	Good	Very poor	Very poor	Good
Deerfield: DeB	Poor	Fair	Fair	Fair	Fair	Poor	Very poor	Fair
Hadley: Ha	Good	Good	Good	Good	Good	Poor	Very poor	Good
Hartland:								
HfC	Fair	Good	Good	Good	Good	Very poor	Very poor	Good
HfD	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair
Hinckley:								
HkB, HkC	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor
HkD	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor
Hollis:								
HrB, HrC, HrD, HtB, HtC	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor
HtD	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor
Limerick: Lk	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair
Lyman: LyB, LyC, LyD, LzC	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor
Monarda:								
MoA	Poor	Poor	Fair	Fair	Fair	Good	Fair	Poor
MrA	Very poor	Poor	Fair	Fair	Fair	Good	Fair	Poor
Paxton:[1]								
PbB, PdB	Fair	Good	Good	Good	Good	Poor	Very poor	Good
PbC, PdC2	Fair	Good	Good	Good	Good	Very poor	Very poor	Good
PcB, PeB	Very poor	Poor	Good	Good	Good	Poor	Very poor	Poor
PcC, PcD, PeC, PeD	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor
PdD2	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair
Peru:								
PfB	Fair	Good	Good	Good	Good	Poor	Very poor	Good
PkB	Very poor	Poor	Good	Good	Good	Poor	Very poor	Poor
PkC	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor
Ridgebury:								
RcA	Poor	Poor	Fair	Fair	Fair	Good	Fair	Poor
RdA	Very poor	Poor	Fair	Fair	Fair	Good	Fair	Poor

See footnote at end of table.

TABLE 4.—*Wildlife*—Continued

Soil series and map symbols	Elements of wildlife habitat							
	Grain and seed crops	Domestic grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland
Rifle: RF	Very poor	Very poor	Poor	Poor	Poor	Good	Good	Very poor
Saco: SA	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor
Scantic: ScA	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair
Scarboro: Sd	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor
Scio:								
SkB	Fair	Good	Good	Good	Good	Poor	Very poor	Good
SkC2	Fair	Good	Good	Good	Good	Very poor	Very poor	Good
Suffield:								
SuC2	Fair	Good	Good	Good	Good	Very poor	Very poor	Good
SuD2	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair
SuE2	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor
Togus: TO	Very poor	Very poor	Poor	Poor	Poor	Good	Good	Very poor
Vassalboro: VA	Very poor	Very poor	Poor	Poor	Poor	Good	Good	Very poor
Windsor:								
WmB, WmC	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor
WmD	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor
Winooski: Wn	Good	Good	Good	Good	Good	Poor	Poor	Good
Woodbridge:								
WrB	Fair	Good	Good	Good	Good	Poor	Very poor	Good
WrC	Fair	Good	Good	Good	Good	Very poor	Very poor	Good
WsB	Very poor	Poor	Good	Good	Good	Poor	Very poor	Poor
WsC	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor

[1] The Charlton part of PdB, PdC2, PdD2, PeB, PeC, and PeD is rated the same as the Paxton part.

practical to manage for specific kinds of wildlife.

5. Determine areas that are suitable for acquisition for use as wildlife habitat.

Each soil is rated in table 4 according to its suitability to produce various kinds of plants and other elements that make up wildlife habitat. The seven elements considered important are as follows:

Grain and seed crops.—These crops include such seed-producing annuals as corn, sorghum, wheat, barley, oats, millet, buckwheat, and other plants commonly grown for grain or for seed. The major soil properties affecting this habitat element are effective rooting depth, available water capacity, natural drainage, slope, surface stoniness, hazard of flooding, and texture of the surface layer.

Domestic grasses and legumes.—In this group are domestic perennial grasses and herbaceous legumes that are established by planting and that furnish wildlife cover and food. Among the plants are bluegrass, fescue, ryegrass, brome, timothy, orchardgrass, reed canarygrass, clover, alfalfa, trefoil, crown vetch, and flatpea. The major soil properties affecting this habitat element are effective rooting depth, available water capacity, natural drainage, slope, surface stoniness, hazard of flooding, and texture of the surface layer.

Wild herbaceous plants.—In this group are native or introduced perennial grasses and weeds that generally are established naturally. Some examples are bluestem, quackgrass, goldenrod, wild carrot, nightshade, sweet fern, and dandelion. They provide food and cover principally to upland forms of wildlife. The major soil properties affecting this habitat element are effective rooting depth, available water capacity, natural drainage, surface stoniness, hazard of flooding or ponding, and texture of the surface layer.

Hardwood trees.—This element includes nonconiferous trees, shrubs, and wood vines that produce nuts or other fruits, buds, catkins, twigs, or foliage that wildlife eat. They are generally established naturally, but may be planted. In this group are oak, cherry, maple, poplar, beech, apple, hawthorn, dogwood, sumac, hazelnut, black walnut, hickory, bayberry, blueberry, huckleberry, sweet gale, alder, willows, buttonbush, viburnum, grape, blackberry, and raspberry. The major soil properties affecting this habitat element are effective rooting depth, available water capacity, and natural drainage.

Also in this group are several varieties of fruiting shrubs that are raised commercially for planting. Autumn-olive, Amur honeysuckle, Tatarian honeysuckle, crabapple, multiflora rose, highbush cranberry, and silky dogwood are some of the shrubs that generally are available and can be planted on soils that are rated well suited. Hardwoods that are not available commercially can commonly be transplanted successfully.

Coniferous plants.—This element consists of cone-bearing evergreen trees and shrubs that are used by wildlife primarily as cover, though they also provide browse and seeds or fruitlike cones. Among them are spruce, white pine, red pine, northern white-cedar, eastern hemlock, balsam fir, juniper, yew, and tamarack. Generally, the plants are established naturally, but they may also be planted. The major soil properties affecting this habitat element are effective rooting depth, available water capacity, and natural drainage.

Wetland plants.—In this group are wild, herbaceous, annual and perennial plants that grow on moist to wet sites, exclusive of submerged or floating aquatics. They produce food and cover extensively used by wetland forms of wildlife. They include smartweed, wild millet, rushes, sedges, barnyardgrass, arrow-arum, pickerelweed, wetland grasses, wildrice, and cattails. The major soil properties affecting this habitat element are natural drainage, surface stoniness, slope, and texture of the surface layer.

Shallow water areas.—These are areas of shallow water, generally not exceeding 5 feet in depth, near food and cover for wetland wildlife. They may be natural wet areas, or created by dams or levees, or caused by water-control devices in marshes or streams. Examples of such developments are wildlife ponds, beaver ponds, and waterfowl marshes. The major soil properties affecting this habitat element are depth to bedrock, natural drainage, slope, surface stoniness, and permeability. Natural wet areas that are aquifer fed are rated on the basis of drainage class without regard to permeability. Permeability of the soil applies only to those non-aquifer areas with a potential for development, and water is assumed to be available offsite.

Table 4 rates the soils according to their suitability for three general kinds of wildlife habitat in the county —openland, woodland, and wetland wildlife.

Openland wildlife.—Examples of openland wildlife are bobolink, marsh hawk, pheasant, meadowlark, field sparrow, dove, red fox, and woodchuck. These birds and mammals normally make their home in areas of cropland, pasture, meadow, and lawns and in areas overgrown with grasses, herbs, shrubs, and vines.

Woodland wildlife.—Among the birds and mammals that prefer woodland are ruffed grouse, woodcock, thrush, vireo, scarlet tanager, barred owl, varying hare, gray and red squirrels, gray fox, white-tailed deer, raccoon, bear, and moose. They obtain food and cover in stands of hardwoods, coniferous trees, shrubs, or a mixture of these plants.

Wetland wildlife.—Ducks, geese, rails, herons, shore birds, and muskrat are familiar examples of birds and mammals that normally make their home in wet areas, such as ponds, marshes, and swamps.

Each rating under "Kinds of Wildlife" in table 4 is based on the ratings listed for the "Elements of Wildlife Habitat" in the first part of the table. For openland wildlife, the rating is based on the ratings for grain and seed crops, domestic grasses and legumes, wild herbaceous plants, and either hardwood trees or coniferous plants, whichever is most applicable. The rating for woodland wildlife is based on the ratings for domestic grasses and legumes, wild herbaceous plants, and either hardwood trees or coniferous plants, whichever is most applicable. For wetland wildlife the rating is based on the ratings for wetland plants and shallow water areas.

On soils rated *good,* habitat is generally easily created, improved, or maintained. There are few or no soil limitations, and satisfactory results are well assured.

On soils rated *fair,* habitat usually can be created,

improved, or maintained, but the soils have moderate limitations that affect the creation, improvement, or maintenance of the habitat. A moderate intensity of management and fairly frequent attention may be required to assume satisfactory results.

On soils rated *poor*, habitat can usually be created, improved, or maintained; but there are rather severe soil limitations. Habitat management may be difficult, expensive, and require intensive effort. Satisfactory results are questionable.

On soils rated *very poor*, it is impractical to create, improve, or maintain habitat because of the very severe soil limitations. Unsatisfactory results are probable.

Not considered in the ratings are present land use, the location of a soil in relation to other soils, and the mobility of wildlife.

Engineering Uses of the Soils [4]

This section is useful to planning commissions, town and city managers, land developers, engineers, contractors, farmers, and others who need information about soils used as structural material or as foundation on which structures are built.

Among properties of soils highly important in engineering are permeability, strength, compaction characteristics, drainage, shrink-swell potential, grain size, plasticity, and reaction. Also important are depth to the water table, depth to bedrock, and slope. These properties, in varying degrees and combinations, affect construction and maintenance of roads, airports, pipelines, foundations for small buildings, irrigation systems, ponds and small dams, and systems for disposal of sewage and refuse.

Information in this section of the soil survey can be helpful to those who—

1. Select potential residential, industrial, commercial, and recreational areas.
2. Evaluate alternate routes for roads, highways, pipelines, and underground cables.
3. Seek sources of gravel, sand, or clay.
4. Plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for controlling water and conserving soil.
5. Correlate performance of structures already built with properties of the soils on which they are built, to help predict performance of structures on the same or similar kinds of soil in other locations.
6. Predict the trafficability of soils for cross-country movement of vehicles and construction equipment.
7. Develop preliminary estimates pertinent to construction in a particular area.

Most of the information in this section is presented in tables. Table 5 shows estimated soil properties significant to engineering. Table 6 gives interpretations for various engineering uses. Table 7 shows the results of engineering laboratory tests on soil samples.

This information, along with the soil map and data in other parts of this publication, can be used to make interpretations in addition to those in table 6, and also to make useful maps.

This information, however, does not eliminate the need for further investigation at sites selected for engineering works, especially works that involve heavy loads or that require excavations to a depth greater than those shown in the tables, generally to a depth of more than 5 feet. Also, inspection of sites, especially the small ones, is needed because many delineated areas of a given soil can include small areas of other kinds of soil that have strongly contrasting properties and different suitability or limitations for soil engineering.

Some of these terms used in this soil survey have special meaning to soil scientists. Many of these terms are defined in the Glossary.

Soil classification systems

The two systems most commonly used in classifying samples of soils for engineering are the Unified System (*2*) used by SCS engineers, the Department of Defense, and others and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO) (*1*).

In the Unified system, soils are classified according to particle-size distribution, plasticity, liquid limit, and organic matter. Soils are grouped in 15 classes. There are eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes are designated by symbols for both classes, for example, CL–ML.

The AASHTO system is used to classify soils according to properties that affect their use in highway construction and maintenance. In this system, a soil is placed in one of seven basic groups ranging from A–1 through A–7 on the basis of grain-size distribution, liquid limit, and plasticity index. In group A–1 are gravelly soils of high bearing strength, or the best soils for subgrade (foundation). At the other extreme, in group A–7, are clay soils that have low strength when wet and that are the poorest soils for subgrade. Where laboratory data are available to justify a further breakdown, the A–1, A–2, and A–7 groups are divided as follows: A–1–a, A–1–b, A–2–4, A–2–5, A–2–6, A–2–7, A–7–5 and A–7–6. As additional refinement, the engineering value of a soil material can be indicated by a group index number. Group indexes range from 0 for the best material to 20 or more for the poorest. The AASHTO classification for tested soils, with group index numbers in parentheses, is shown in table 7; the estimated classification, without group index numbers, is given in table 5 for all soils mapped in the survey area.

Soil properties significant in engineering

Several estimated soil properties significant in engineering are given in table 5. These estimates are made for typical soil profiles, by layers sufficiently different to have different significance for soil engineering. The estimates are based on field observations made in the course of mapping, on test data for these and similar soils, and on experience with the same kinds of soil in

[4] FRANKLIN R. FARMER, State conservation engineer, Soil Conservation Service, helped prepare this section.

TABLE 5.—*Estimated soil properties*

[An asterisk in the first column indicates that the mapping unit is made up of two or more kinds of soils. The soils in this indicated in the first column. The symbol <

Soil series and map symbols	Depth to—		Potential frost action	Depth from surface	USDA texture	Classification		Coarse fraction greater than 3 inches
	Bedrock	Seasonal high water table				Unified	AASHTO	
	Feet	*Feet*		*Inches*				*Percent*
Berkshire: BhB, BkB, BkC, BkD	>5	>6	Moderate	0–9	Fine sandy loam	SM, ML	A–2, A–4	5–15
				9–24	Gravelly fine sandy loam.	SM, ML	A–2, A–4	5–15
				24–60	Gravelly sandy loam.	SM, ML	A–2, A–4	5–15
Biddeford: Bo	>5	0–½	High	8–0	Mucky peat	Pt	A–8	----
				0–5	Silt loam	ML, CL, OL	A–4, A–6	0
				5–60	Silty clay loam, silty clay.	CL, CH	A–6, A–7	0
Buxton: BuB2, BuC2	>5	1–3	High	0–12	Silt loam	ML, CL	A–4, A–6	0
				12–19	Silty clay loam	MH, CL	A–4, A–6, A–7	0
				19–60	Silty clay	MH, CL	A–6, A–7	0
Charlton: Mapped only in complex with Paxton soil.	>5	3–6	Moderate	0–8	Fine sandy loam	SM, ML	A–2, A–4	5–10
				8–30	Fine sandy loam, gravelly fine sandy loam.	SM, ML	A–2, A–4	5–15
				30–60	Gravelly fine sandy loam.	SM	A–2, A–4	5–15
Deerfield: DeB	>5	1–3	Moderate	0–15	Loamy fine sand	SM, SP–SM	A–2, A–3, A–4	0
				15–60	Loamy sand	SP, SM	A–1, A–2, A–3	0
Hadley: Ha	>5	3–6	High	0–10	Silt loam	ML, CL–ML	A–4	0
				10–28	Very fine sandy loam.	SM, ML, CL–ML	A–4	0
				28–60	Silt loam	ML, CL–ML SM	A–4	0
Hartland: HfC, HfD	>5	>6	High	0–15	Very fine sandy loam.	ML, CL–ML	A–4	0
				15–28	Silt loam	ML, CL–ML	A–4	0
				28–60	Very fine sandy loam.	ML, CL–ML	A–4	0
Hinckley: HkB, HkC, HkD	>5	>6	Low	0–10	Gravelly sandy loam.	SM, SP–SM	A–1, A–2 A–4	0–35
				10–30	Gravelly loamy sand.	SM, GM, GP–GM, SW–SM	A–1, A–2	0–35
				30–60	Very gravelly coarse sand.	SP, SP–SM, GP, GP–GM	A–1	10–40
Hollis: HrB, HrC, HrD, HtB, HtC, HtD No estimates for the Rock outcrop part of HtB, HtC, or HtD.	½–1½	(1)	Moderate	0–11	Fine sandy loam	SM, ML	A–2, A–4	0–15
				11–18	Gravelly fine sandy loam.	SM, ML	A–2, A–4	0–15
				18	Bedrock.			
Limerick: Lk	>5	½–1½	High	0–10	Silt loam	ML	A–4	0
				10–60	Silt loam	ML	A–4	0

See footnote at end of table.

significant to engineering

mapping unit may have some different properties and limitations, and for this reason it is necessary to refer to other series as means less than; the symbol > means more than]

Percent less than 3 inches passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential	Corrosivity	
No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)					Uncoated steel	Concrete
				Inches per hour	*Inches per inch of soil*	*pH*			
80–95	70–90	60–85	30–65	0.6–6.0	0.08–0.23	4.5–6.0	Low	Low	High.
70–95	65–85	50–75	30–60	0.6–6.0	0.06–0.19	4.5–6.0	Low	Low	High
75–90	65–85	40–80	25–60	0.6–6.0	0.06–0.19	4.5–6.0	Low	Low	High.
				2.0.>6.0	>0.30	5.6–6.5	High shrink, low swell.	Moderate	Low.
100	100	90–100	75–90	0.2–0.6	0.16–0.30	5.6–6.5	Low	High	Moderate.
100	100	95–100	75–95	<0.2		5.6–7.3	Moderate	High	Moderate.
100	100	95–100	80–90	0.2–2.0	0.14–0.30	4.5–6.5	Low	High	Moderate.
100	100	90–100	80–95	0.2–0.6	0.11–0.26	5.1–6.0	Low to moderate.	High	Moderate.
100	100	90–100	80–95	<0.2	0.09–0.18	5.6–7.3	Moderate	High	Moderate.
75–95	70–90	60–75	30–65	0.6–6.0	0.08–0.23	4.5–6.0	Low	Low	High.
65–90	60–90	40–80	20–60	0.6–6.0	0.05–0.20	4.5–6.0	Low	Low	High.
60–90	60–85	40–70	20–40	0.6–6.0	0·05–0.16	4.5–6.0	Low	Low	High.
95–100	80–100	35–85	5–40	<6.0	0.01–0.18	4.5–6.0	Low	Low	Moderate.
95–100	75–100	35–75	0–20	<6.0	0.01–0.13	4.5–6.0	Low	Low	Moderate
100	100	95–100	70–95	0.6–2.0	0.15–0.30	5.1–6.5	Low	Low	Moderate.
100	100	85–100	40–100	0.6–2.0	0.13–0.26	5.1–6.5	Low	Low	Moderate.
100	100	65–95	35–85	0.6–2.0	0.10–0.22	5.1–6.5	Low	Low	Moderate.
100	100	85–95	50–65	0.6–2.0	0.12–0.30	5.1–7.3	Low	Moderate	Moderate.
100	100	95–100	65–90	0.6–2.0	0.12–0.21	5.1–7.3	Low	Moderate	Moderate.
100	100	95–100	55–90	0.2–2.0	0.10–0.21	5.1–7.3	Low	Moderate	Moderate.
70–95	50–85	25–75	5–50	>6.0	0.05–0.12	4.0–6.0	Low	Low	High.
60–90	35–80	20–75	5–30	>6.0	0.03–0.09	4.0–6.0	Low	Low	High.
30–70	20–50	10–40	0–10	>6.0	0.01–0.06	4.0–6.0	Low	Low	High.
85–95	80–95	65–80	30–65	2.0–6.0	0.10–0.21	4.5–5.5	Low	Low	High.
75–90	65–80	50–65	20–55	2.0–6.0	0.06–0.18	4.5–5.5	Low	Low	High.
100	100	95–100	85–95	0.6–2.0	0.18–0.25	5.1–7.3	Low	High	Low.
100	100	90–100	60–95	0.6–2.0	0.18–0.25	5.6–7.3	Low	High	Low.

TABLE 5.—*Estimated soil properties*

Soil series and map symbols	Depth to—		Potential frost action	Depth from surface	USDA texture	Classification		Coarse fraction greater than 3 inches
	Bedrock	Seasonal high water table				Unified	AASHTO	
	Feet	*Feet*		*Inches*				*Percent*
Lyman: LyB, LyC, LyD, LzC	½–1½	(1)	Moderate	0–3	Loam	SM, ML, CL–ML	A–4	0–20
				3–18	Fine sandy loam	SM, ML, CL–ML	A–2, A–4	0–20
No estimates for the Rock outcrop part of LzC.				18	Bedrock.			
Monarda: MoA, MrA	>5	0–1½	High	0–5	Silt loam	ML, CL–ML	A–4, A–5	0–15
				5–13	Silt loam	ML, CL–ML, SM	A–4	0–15
				13–60	Silt loam (fragipan).	ML, CL–ML, SM	A–4	0–15
*Paxton: PbB, PbC, PcB, PcC, PcD, PdB, PdC2, PdD2, PeB, PeC, PeD. For Charlton part of PdB, PdC2, PdD2, PeB, PeC, and PeD, see Charlton series.	>5	2–6	Moderate	0–8	Fine sandy loam	SM	A–2, A–4	0–10
				8–3	Gravelly fine sandy loam.	SM, ML, SC	A–2, A–4	0–15
				31–60	Fine sandy loam (fragipan).	SM, ML, SC	A–2, A–4	0–15
Peru: PfB, PkB, PkC	>5	1½–3	High	0–5	Fine sandy loam	SM	A–2, A–4	0–10
				5–22	Fine sandy loam	SM, ML, SC	A–2, A–4	0–15
				22–60	Fine sandy loam (fragipan).	SM, ML, SC	A–2, A–4	0–15
Ridgebury: RcA, RdA	>5	0–1½	High	0–8	Fine sandy loam	SM	A–2, A–4	0–15
				8–14	Fine sandy loam	SM, ML	A–2, A–4	0–15
				14–60	Fine sandy loam (fragipan).	SM, ML	A–2, A–4	0–15
Rifle: RF	>5	1–0	High	0–65	Mucky peat	Pt	A–8	
Saco: SA	>5	0–½	High	0–11	Very fine sandy loam.	ML, OL	A–4	0
Estimated properties are based on the representative profile.				11–34	Silt loam	ML	A–4	0
				34–60	Very fine sandy loam.	ML	A–4	0
Scantic: ScA	>5	0–1½	High	0–9	Silt loam	ML, MH, CL, OL	A–4, A–6	0
				9–30	Silty clay loam, silty clay.	CL, MH, CH, CL–ML	A–4, A–6, A–7	0
				30–60	Silty clay	CL, CL–ML	A–6, A–7	0
Scarboro: Sd	>5	0–1	Moderate	4–0	Mucky peat	Pt	A–8	
				0–10	Mucky loamy fine sand.	SM	A–4	0
				10–60	Fine sand, sand	SM, SP–SM	A–1, A–2	0
Scio: SkB, SkC2	>5	1–3	High	0–13	Very fine sandy loam.	ML, CL–ML	A–4	0
				13–22	Silt loam	ML, CL–ML	A–4	0
				22–60	Very fine sandy loam, silt loam.	ML, CL–ML	A–4	0

See footnote at end of table.

significant to engineering—Continued

Percent less than 3 inches passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential	Corrosivity	
No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)					Uncoated steel	Concrete
				Inches per hour	*Inches per inch of soil*	*pH*			
80–95	75–90	65–85	45–70	0.6–6.0	0.05–0.23	<4.5–6.0	Low	Low	High.
65–95	60–90	45–85	25–70	0.6–6.0	0.05–0.23	<4.5–6.0	Low	Low	High.
80–95	55–95	70–80	50–75	0.6–2.0	0.15–0.28	4.5–6.5	Low	High	High.
75–95	50–95	45–95	35–85	0.6–2.0	0.10–0.22	4.5–6.5	Low	High	High
70–95	55–95	45–95	35–85	<0.2	0.05–0.10	5.1–7.3	Low	High	Moderate.
80–95	75–90	55–75	30–50	0.6–6.0	0.08–0.23	5.1–6.5	Low	Low	Moderate.
75–95	65–90	55–85	30–60	0.6–6.0	0.06–0.20	5.1–6.5	Low	Low	Moderate.
70–90	60–90	40–75	20–60	0.06–0.6	0.05–0.12	5.1–6.5	Low	Low	Moderate.
80–95	70–90	50–75	25–50	0.6–2.0	0.10–0.24	4.5–6.0	Low	Moderate	Moderate
75–95	65–90	45–85	25–65	0.6–2.0	0.06–0.21	4.5–6.0	Low	Moderate	Moderate.
70–90	60–90	45–75	20–60	0.06–0.6	0.05–0.12	4.5–6.0	Low	Moderate	Moderate.
80–100	75–90	55–75	30–50	0.6–6.0	0.06–0.24	4.5–6.0	Low	High	High
65–100	55–95	35–85	20–60	0.6–6.0	0.04–0.20	4.5–6.0	Low	High	High.
65–95	55–90	35–80	20–60	0.06–0.6	0.08–0.12	4.5–6.0	Low	High	High.
				2.0–6.0	0.20–0.40	5.6–7.3	High shrink, low swell.	Moderate	Moderate.
100	95–100	85–95	50–60	0.6–2.0	0.17–0.30	5.1–6.5	Low	High	Moderate.
100	95–100	85–100	55–90	0.6–2.0	0.15–0.26	5.1–6.5	Low	Moderate	Moderate.
100	95–100	85–100	50–90	0.6–2.0	0.10–0.26	5.6–7.3	Low	High	Low.
100	100	90–100	70–90	0.6–2.0	0.14–0.30	5.1–6.0	Low	High	Moderate.
100	100	95–100	80–95	<0.2	0.11–0.18	5.6–7.3	Low to moderate.	High	Moderate.
100	100	95–100	90–95	<0.2	0.09–0.18	5.6–7.3	Moderate	High	Moderate.
				2.0–>6.0	>0.30	4.5–6.0	High shrink, low swell.	Moderate	High.
90–100	80–100	65–95	25–50	2.0–6.0	0.07–0.23	4.5–6.0	Low	Moderate	High.
85–100	80–100	45–90	5–35	>6.0	0.01–0.13	4.5–6.0	Low	Moderate	High.
100	100	85–95	50–65	0.6–2.0	0.17–0.30	5.1–6.0	Low	Moderate	Moderate.
100	100	85–100	50–90	0.6–2.0	0.15–0.26	5.1–6.0	Low	Moderate	Moderate.
100	100	85–100	50–90	0.2–2.0	0.15–0.26	5.1–6.0	Low	Moderate	Moderate.

TABLE 5.—*Estimated soil properties*

Soil series and map symbols	Depth to—		Potential frost action	Depth from surface	USDA texture	Classification		Coarse fraction greater than 3 inches
	Bedrock	Seasonal high water table				Unified	AASHTO	
	Feet	*Feet*		*Inches*				*Percent*
Suffield: SuC2, SuD2, SuE2	>5	>6	High	0–6	Silt loam	ML	A–4, A–6	0
				6–18	Silt loam	ML	A–4, A–6	0
				18–60	Silty clay loam	CL	A–6, A–7	0
Togus: TO	>5	2–0	High	0–36	Fibrous peat	Pt	A–8	
				36–65	Fine sand, sand	SP–SM, SM	A–1, A–2, A–4	0
Vassalboro: VA	>5	1–0	High	0–65	Fibrous peat	Pt	A–8	
Windsor: WmB, WmC, WmD	>5	>6	Low	0–10	Loamy sand	SM	A–2	0
				10–29	Loamy sand	SP, SM	A–2, A–3	0
				29–60	Sand	SP, SM	A–2, A–3	0
Winooski: Wn	>5	1–3	High	0–10	Silt loam	CL–ML, ML	A–4	0
				10–42	Silt loam	CL–ML, ML	A–4	0
				42–60	Very fine sand	CL–ML, ML SM	A–2, A–4	0
Woodbridge: WrB, WrC, WsB, WsC	>5	1½–3	High	0–7	Fine sandy loam	SM	A–2, A–4	0–10
				7–22	Fine sandy loam	SM, ML, SC	A–2, A–4	0–15
				22–60	Fine sandy loam (fragipan)	SM, ML, SC	A–2, A–4	0–15

[1] No seasonal water table above the bedrock.

other counties. Following are explanations of some of the column headings in table 5.

Depth to bedrock is the distance from the surface of the soil to the rock layer.

Depth to seasonal high water table is the distance from the surface of the soil to the highest level that ground water reaches in the soil in most years.

Potential frost action is the likelihood of upward lateral expansion of soils (frost heave) because of the formation of segregated ice lenses and the subsequent loss of strength and collapse on thawing.

Soil texture is described in table 5 in the standard terms used by the Department of Agriculture. These terms take into account relative percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loamy sand." "Sand," "silt," "clay," and some of the other terms used are defined in the Glossary of this soil survey.

Permeability is that quality of a soil that enables it to transmit water or air. It is estimated on the basis of those soil characteristics observed in the field, particularly structure and texture. The estimates in table 5 do not take into account lateral seepage or such transient soil features as plowpans and surface crusts.

Available water capacity is the ability of soils to hold water for use by most plants. It is commonly defined as the difference between the amount of water in the soil at field capacity and the amount at the wilting point of most crop plants.

Reaction is the degree of acidity or alkalinity of a soil, expressed in pH values. The pH value and terms used to describe soil reaction are explained in the Glossary.

Shrink-swell potential is the relative change in volume of soil material to be expected with changes in moisture content, that is, the extent to which the soil shrinks as it dries out or swells when it gets wet. Extent of shrinking and swelling is influenced by the amount and kind of clay in the soil. Shrinking and swelling of soils cause much damage to building foundations, roads, and other structures. A *high* shrink-swell

significant to engineering—Continued

Percent less than 3 inches passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential	Corrosivity	
No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)					Uncoated steel	Concrete
				Inches per hour	*Inches per inch of soil*	*pH*			
95–100	95–100	90–100	70–90	0.6–2.0	0.16–0.30	4.5–5.5	Low	Moderate	Moderate.
95–100	95–100	90–100	70–90	0.6–2.0	0.14–0.26	5.1–5.5	Low	Moderate	Moderate.
100	100	95–100	85–95	<0.2	0.11–0.18	5.6–6.5	Moderate	Moderate	Moderate.
				2.0–6.0	0.20–0.40	5.1–6.5	High shrink, low swell.	Moderate	Moderate.
90–100	80–90	40–80	5–50	>6.0	0.01–0.07	5.6–6.5	Low	Moderate	Moderate.
				2.0–6.0	0.2–0.40	3.6–5.0	High shrink, low swell.	High	High.
95–100	90–100	45–80	20–30	>6.0	0.08–0.15	4.5–5.5	Low	Low	High.
95–100	90–100	45–80	0–30	>6.0	0.02–0.13	4.5–5.5	Low	Low	High.
90–100	90–100	45–80	0–20	>6.0	0.01–0.08	4.5–5.5	Low	Low	High.
100	100	95–100	75–90	0.6–2.0	0.15–0.30	4.5–7.3	Low	Moderate	Moderate.
100	100	85–100	55–90	0.6–2.0	0.13–0.26	5.6–7.3	Low	Moderate	Moderate.
100	100	65–100	20–90	0.6–2.0	0.05–0.22	5.6–7.3	Low	Moderate	Moderate.
80–95	75–90	55–75	30–50	0.6–6.0	0.08–0.23	5.1–6.0	Low	Moderate	Moderate.
75–95	65–90	55–85	30–60	0.6–6.0	0.06–0.20	5.1–6.0	Low	Moderate	Moderate.
70–90	60–90	40–75	20–60	0.06–0.6	0.05–0.12	5.1–6.0	Low	Moderate	Moderate.

potential indicates a hazard to the maintenance of structures built in, on, or with material having this rating.

Corrosivity pertains to potential soil-induced chemical action that dissolves or weakens uncoated steel or concrete. Rate of corrosion of uncoated steel is related to soil properties such as drainage, texture, total acidity, and electrical conductivity of the soil material. Corrosivity for concrete is influenced mainly by the content of sodium or magnesium sulfate, but also by soil texture and acidity. Installations of uncoated steel that intersect soil boundaries or soil horizons are more susceptible to corrosion than installations entirely in one kind of soil or in one soil horizon. A corrosivity rating of *low* means that there is a low probability of soil-induced corrosion damage. A rating of *high* means that there is a high probability of damage, so that protective measures for steel and more resistant concrete should be used to avoid or minimize damage.

Engineering interpretations of soils

The estimated interpretations in table 6 are based on the engineering properties of soils shown in table 5, on test data for soils in this survey area and others nearby or adjoining, and on the experience of engineers and soil scientists with the soils of Kennebec County. In table 6, summarized limitations or ratings of suitability of the soils are given for all listed purposes other than for highway and road location, ponds and reservoirs, drainage of cropland and pasture, irrigation, terraces and diversions, and grassed waterways. For these particular uses, those soil features not to be overlooked in planning, installation, and maintenance are listed.

In table 6 ratings of *good, fair,* or *poor* have been given for the suitability of the soil as a source of topsoil, sand and gravel, and road fill. The ratings are explained as follows:

Good—The soil has properties that are suitable for the use proposed.

Fair—The soil is basically suited for the proposed use but does have one or more properties that are not compatible with the use intended.

Poor—The soil has one or more pertinent properties not compatible with the proposed use.

Topsoil is used for topdressing an area where vegetation is to be established and maintained. Suitability

TABLE 6.—*Interpretations of*

[An asterisk in the first column indicates that the mapping unit in this series is made up of two or more kinds of soil. The soils indicated in

Soil series and map symbols	Suitability as a source of [1]—			Soil features affecting—
	Topsoil	Sand and gravel	Road fill	Highway and road location
Berkshire: BhB, BkB, BkC, BkD	Poor: coarse fragments.	Poor: excess fines	Fair to good: high in fines; stony soil material.	Stony soil material; frost heaving of stones on cut slopes and in road subgrade.
Biddeford: Bo	Poor: organic surface layer.	Poor: excess fines	Poor: high in clay; high water table.	High water table; not stable; high susceptibility to frost action.
Buxton: BuB2, BuC2	Good	Poor: excess fines	Poor: high in clay; seasonal high water table.	Seasonal high water table; seepage spots in cuts; if wet, cut slopes are not stable; high susceptibility to frost action.
Charlton Mapped only with Paxton soils.	Poor: coarse fragments.	Poor: excess fines	Fair to good: high in fines; stony soil material.	Stony soil material; frost heaving of stones on cut slopes and in road subgrade.
Deerfield: DeB	Fair: sandy	Good for sand. Poor for gravel.	Good: may need some binder; seasonal high water table.	Seasonal high water table; cut slopes are not stable and are erodible; loose sand hinders hauling operations.
Hadley: Ha	Good	Poor: excess fines; sand possible below a depth of 40 inches.	Fair: high in fines	Subject to flooding; high susceptibility to frost action.
Hartland: HfC, HfD	Good	Poor: excess fines; sand and gravel possible below a depth of 60 inches.	Fair: high in fines	Erodible in cuts, high susceptibility to frost action.
Hinckley: HkB, HkC, HkD	Poor: coarse fragments.	Good	Good	Cut slopes are not stable; cobble dislodgement.
Hollis: HrB, HrC, HrD, HtB, HtC, HtD. No interpretations for Rock outcrop part of HtB, HtC, or HtD.	Poor: shallow to bedrock.	Poor: shallow to bedrock.	Poor: shallow to bedrock.	Shallow to bedrock

See footnote at end of table.

engineering properties

in such mapping units may have different properties and limitations, and for this reason it is necessary to refer to other series as the first column]

Soil features affecting—Continued					
Farm ponds		Drainage for crops and pasture	Sprinkler irrigation	Terraces and diversions	Grassed waterways
Reservoir area	Embankment[2]				
Moderately rapid to moderate permeability in underlying material; deep water table.	Low to medium permeability; fair to poor stability; poor to good compaction characteristics; stony soil material.	Well drained	High available water capacity; moderate intake rate.	Moderately rapid to moderate permeability; stony soil material.	Moderately rapid to moderate permeability; high available water capacity; stony soil material.
Slow to very slow permeability; high water table.	Low permeability; fair to good stability; fair to good compaction characteristics; erodible.	High water table; slow to very slow permeability; outlets difficult to find.	High water table; excess wetness.	Practice generally not applied.	Practice generally not applied.
Slow to very slow permeability; seasonal high water table.	Low permeability; poor to good stability and compaction characteristics; erodible.	Seasonal high water table; slow to very slow permeability.	High available water capacity; slow intake rate.	Slow to very slow permeability in underlying material; seepage spots.	Slow to very slow permeability in underlying material; high available water capacity; seepage spots; erodible.
Moderately rapid to moderate permeability; deep water table.	Low permeability; mostly fair stability; fair to good compaction characteristics; stony soil material; susceptible to piping.	Well drained	Moderate available water capacity; moderate to rapid intake rate.	Moderately rapid to moderate permeability; stony soil material.	Moderately rapid to moderate permeability; moderate available water capacity; stony soil material.
Very rapid to rapid permeability in underlying material; seasonal high water table.	Medium to high permeability; fair to poor stability; fair to good compaction characteristics; susceptible to piping.	Seasonal high water table; very rapid to rapid permeability.	Low available water capacity; high intake rate.	Very rapid to rapid permeability in surface layer and subsoil.	Very rapid to rapid permeability in surface layer and subsoil; low available water capacity.
Moderate permeability; deep water table; subject to flooding.	Low permeability; fair to poor stability; poor to good compaction characteristics; susceptible to piping; erodible.	Well drained	High available water capacity; slow to moderate intake rate.	Practice generally not applied.	Practice generally not applied.
Variable permeability; sand lenses; deep water table.	Low permeability; fair to poor stability; poor to good compaction characteristics; susceptible to piping; erodible.	Well drained	High available water capacity; slow intake rate.	Moderate permeability in the surface layer and subsoil.	Moderate permeability in the surface layer and subsoil; high available water capacity.
Very rapid to rapid permeability in underlying material; deep water table.	High permeability; fair stability; fair to good compaction characteristics.	Excessively drained	Low available water capacity; high intake rate.	Very rapid to rapid permeability; sand and gravel.	Very rapid to rapid permeability; sand and gravel; low available water capacity.
Shallow to bedrock	Shallow to bedrock	Shallow to bedrock; somewhat excessively drained.	Shallow to bedrock; low available water capacity.	Shallow to bedrock; stony soil material.	Shallow to bedrock; stony soil material; low available water capacity.

TABLE 6.—*Interpretations of*

Soil series and map symbols	Suitability as a source of [1]—			Soil features affecting—
	Topsoil	Sand and gravel	Road fill	Highway and road location
Limerick: Lk	Good	Poor: excess fines	Fair: high in fines; seasonal high water table may be limiting.	Subject to flooding; seasonal high water table; high susceptibility to frost action.
Lyman: LyB, LyC, LyD, LzC. No interpretations for Rock outcrop part of LzC.	Poor: shallow to bedrock.	Poor: shallow to bedrock.	Poor: shallow to bedrock.	Shallow to bedrock
Monarda: MoA, MrA	Poor: coarse fragments.	Poor: excess fines	Fair to good: high in fines; stony soil material; seasonal high water table may be limiting.	Seasonal high water table; stony soil material; frost heaving of stones on cuts and in road subgrades; firm to very firm underlying material; high susceptibility to frost action.
*Paxton: PbB, PbC, PcB, PcC, PcD, PdB, PdC2, PdD2, PeB, PeC, PeD. For the Charlton part of PdB, PdC2, PdD2, PeB, PeC, and PeD, see the Charlton series.	Poor: coarse fragments.	Poor: excess fines	Fair to good: high in fines; stony soil material.	Stony soil material; seepage spots in cuts; firm underlying material; frost heaving of stones on cut slopes and in road subgrade.
Peru: PfB, PkB, PkC	Poor: coarse fragments.	Poor: excess fines	Fair to good: high in fines; stony soil material; seasonal high water table.	Seasonal high water table; stony soil material; very firm underlying material; seepage spots in cuts; high susceptibility to frost action.
Ridgebury: RcA, RdA	Poor: coarse fragments.	Poor: excess fines	Fair to good: high in fines, stony soil material; seasonal high water table.	Seasonal high water table; firm to very firm in underlying material; stony soil material; frost heaving of stones in cuts and in road subgrades; high susceptibility to frost action.
Rifle: RF	Poor: organic soil.	Poor: organic soil.	Poor: organic soil.	Organic soil material; seasonal high water table.
Saco: SA	Poor: high content of organic matter in surface layer.	Poor: excess fines	Fair: high in fines; seasonal high water table.	Subject to flooding; seasonal high water table; high susceptibility to frost action.

See footnote at end of table.

engineering properties—Continued

Soil features affecting—Continued					
Farm ponds		Drainage for crops and pasture	Sprinkler irrigation	Terraces and diversions	Grassed waterways
Reservoir area	Embankment				
Moderate permeability; subject to flooding; seasonal high water table.	Medium permeability; fair to poor stability and compaction characteristics; susceptible to piping.	Seasonal high water table; moderate permeability; nearly level; outlets difficult to find.	Practice generally not applied.	Practice generally not applied.	Nearly level; subject to flooding.
Shallow to bedrock	Shallow to bedrock	Shallow to bedrock; somewhat excessively drained.	Shallow to bedrock; low available water capacity.	Shallow to bedrock, stony soil material.	Shallow to bedrock; stony soil material; low available water capacity.
Slow to very slow permeability in underlying material; seasonal high water table.	Low permeability; poor to good stability and compaction characteristics; stony soil material; susceptibility to piping; erodible.	Seasonal high water table; slow to very slow permeability in underlying material; stony soil material.	Practice generally not applied.	Practice generally not applied.	Seasonal high water table; nearly level; stony soil material.
Moderately slow to slow permeability in underlying material.	Low permeability; fair to poor stability; fair to good compaction characteristics; susceptible to piping; stony soil material; erodible.	Well drained	Moderate available water capacity; moderate intake rate.	Moderately slow to slow permeability in underlying material; stony soil material; seepage spots.	Moderately slow to slow permeability in underlying material; moderate available water capacity; stony soil material; seepage spots.
Moderately slow to slow permeability in underlying material; seasonal high water table.	Low permeability; fair to poor stability; poor to good compaction characteristics; stony soil material; susceptible to piping; erodible.	Seasonal high water table; moderately slow to slow permeability in underlying material; stony soil material.	Moderate available water capacity; moderate intake rate.	Moderately slow to slow permeability in underlying material; stony soil material; seepage spots.	Moderately slow to slow permeability in underlying material; moderate available water capacity; stony soil material; seepage spots.
Moderately slow to slow permeability in underlying material; seasonal high water table.	Low permeability; fair to poor stability; poor to good compaction characteristics; stony soil material; susceptible to piping; erodible.	Seasonal high water table; moderately slow to slow permeability in underlying material; stony soil material.	Practice generally not applied.	Practice generally not applied.	Seasonal high water table; nearly level; stony soil material.
Organic soil material; seasonal high water table.	Organic soil material.	Organic soil material; seasonal high water table.	Practice generally not applied.	Practice generally not applied.	Practice generally not applied.
Moderate permeability; subject to frequent flooding; seasonal high water table.	Low to medium permeability; fair to poor stability; poor to fair compaction characteristics; susceptible to piping; erodible.	Seasonal high water table; nearly level; outlets difficult to find; subject to flooding.	Practice generally not applied.	Practice generally not applied.	Practice generally not applied.

TABLE 6.—*Interpretations of*

Soil series and map symbols	Suitability as a source of [1]—			Soil features affecting—
	Topsoil	Sand and gravel	Road fill	Highway and road location
Scantic: ScA	Good	Poor: excess fines	Poor: high in clay	Seasonal high water table; cut slopes are unstable and erodible; high susceptibility to frost action.
Scarboro: Sd	Fair: sandy; high content of organic matter in surface layer.	Poor to good: sand below a depth of of 2 feet. Poor for gravel.	Good below a depth of of 2 feet; high water table.	Seasonal high water table.
Scio: SkB, SkC2	Good	Poor: excess fines	Fair: high in fines; seasonal high water table.	Seasonal high water table; seepage spots in cuts; cut slopes erodible; high susceptibility to frost action.
Suffield: SuC2, SuD2, SuE2	Good	Poor: excess fines	Poor: high in clay	Cut slopes are not stable; silty clay loam underlying material; high susceptibility to frost action.
Togus: TO	Poor: organic soil	Poor: organic soil, sand below a depth of 36 inches.	Poor: organic soil	Organic soil material; seasonal high water table.
Vassalboro: VA	Poor: organic soil	Poor: organic soil	Poor: organic soil	Organic soil material; seasonal high water table.
Windsor: WmB, WmC, WmD	Fair: sandy	Good for sand, poor for gravel.	Good: may need some binder.	Cut slopes are not stable; loose sand hinders hauling operations.
Winooski: Wn	Good	Poor: excess fines	Fair: high in fines; seasonal high water table.	Subject to flooding; seasonal high water table; high susceptibility to frost action.
Woodbridge: WrB, WrC, WsB, WsC	Poor: coarse fragments.	Poor: excess fines	Fair to good: high in fines; stony soil material; seasonal high water table.	Seasonal high water table; seepage spots in cuts; stony soil material; frost heaving of stones on cut slopes and road subgrade; high susceptibility to frost action.

[1] Does not indicate quality of deposit or effect of slope.

engineering properties—Continued

Soil features affecting—Continued					
Farm ponds		Drainage for crops and pasture	Sprinkler irrigation	Terraces and diversions	Grassed waterways
Reservoir area	Embankment				
Slow to very slow permeability; seasonal high water table.	Low permeability; poor to good stability and compaction characteristics; erodible.	Seasonal high water table; slow to very slow permeability.	Practice generally not applied.	Practice generally not applied.	Seasonal high water table; nearly leve
Very rapid to rapid permeability; seasonal high water table.	Low to high permeability; fair to poor stability; fair to good compaction characteristics.	Seasonal high water table; very rapid to rapid permeability.	Practice generally not applied.	Practice generally not applied.	Practice generally not applied.
Moderate to moderately slow permeability; seasonal high water table.	Low to medium permeability; poor to good stability and compaction characteristics; susceptible to piping; erodible.	Seasonal high water table; moderate to moderately slow permeability.	High available water capacity; slow intake rate.	Moderate to moderately slow permeability erodible; seepage spots.	Moderate to moderately slow permeability; high available water capacity; erodible; seepage spots.
Slow to very slow permeability in underlying material; seasonal high water table.	Low permeability; fair to good stability and compaction characteristics for underlying material; erodible.	Well drained	High available water capacity; slow intake rate.	Slow to very slow permeability in underlying material; erodible.	Slow to very slow permeability in underlying material; high available water capacity.
Organic soil material; seasonal high water table.	Organic soil material.	Organic soil material; seasonal high water table.	Practice generally not applied.	Practice generally not applied.	Practice generally not applied.
Organic soil material; seasonal high water table.	Organic soil material.	Organic soil material; seasonal high water table.	Practice generally not applied.	Practice generally not applied.	Practice generally not applied.
Very rapid to rapid permeability; deep water table.	High permeability; fair to poor stability; fair to good compaction characteristics; erodible.	Excessively drained	Low available water capacity; high intake rate.	Practice generally not applied.	Very rapid to rapid permeability; low available water capacity.
Moderate permeability; subject to flooding; seasonal high water table.	Low permeability; fair to poor stability and compaction characteristics; susceptible to piping.	Seasonal high water table; moderate permeability; nearly level; outlets difficult to find.	High available water capacity; moderate intake rate.	Practice generally not applied.	Practice generally not applied.
Moderately slow to slow permeability in underlying material; seasonal high water table.	Low permeability; fair to poor stability; poor to good compaction characteristics; stony soil material.	Seasonal high water table; moderately slow to slow permeability in underlying material; stony soil material.	Moderate available water capacity; moderate intake rate.	Moderately slow to slow permeability in underlying material; stony soil material; erodible.	Moderately slow to slow permeability in underlying material; moderate available water capacity; stony soil material; seepage spots.

[2] Permeability is stated for the compacted soil.

TABLE 7.—*Engineering*

[Tests performed by the State of Maine, Department of Transportation, Materials and Research Division, according

Soil name and location of sample	Parent material	Report No. S65Me6	Depth from surface	Moisture-density data[1]		Fragments larger than 3 inches in diameter discarded in field sampling	Mechanical analysis[2]		
				Maximum dry density	Optimum moisture		Percentage passing sieve[3]—		
							3 inches	1½ inches	¾ inch
			Inches	*Pounds per cubic feet*	*Percent*	*Percent*			
Berkshire fine sandy loam: Town of Rome—north side of State Route 225, 1½ miles west of the county line (modal).	Glacial till.	10–1	9–24	113	10	15	100	93	85
		10–2	24–40	122	11	15	100	95	89
Hinckley gravelly sandy loam: Town of China—1¼ miles west of Palermo Post Office along State Route 3, on north side of road (coarser textured than modal).	Glacial outwash.	13–1	11–24	114	14	2	100	99	96
		13–2	24–48	126	11	40	100	91	70
Ridgebury fine sandy loam: Town of Readfield—50 feet west of State Route 135 and ½ mile south of Manchester town line (modal).	Glacial till.	5–1	8–24	114	14	----------	--------	100	99
		5–2	24–40	118	13	----------	--------	100	99
Windsor loamy sand: Town of Winthrop — 1½ miles south of State Route 202, on west side of Lake Annabessacook on east side of highway (Finer textured than modal).	Glacial outwash.	1–1	5–20	107	15	----------	--------	--------	100
		1–2	20–60	103	16	----------	--------	--------	--------

[1] Based on AASHTO Designation: T 99–57 Method C (*1*) .

[2] Mechanical analyses according to the AASHTO Designation T 88–57 (*1*) . Results by this procedure may differ somewhat from the results obtained by the soil survey procedure of the Soil Conservation Service (SCS) .In the AASHTO procedure, the fine material is analyzed by hydrometer method, and various grain-size fractions are calculated on the basis of all material up to and including that 3 inches in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method, and the material coarser than 2 millimeters in diameter is excluded from the calculation of grain-size fractions. The mechanical analyses data used in this table are not suitable for use in naming textural classes of soil.

is affected mainly by ease of working and spreading the soil material, as in preparing a seedbed; natural fertility of the material or plant response when fertilizer is added to the soil, and absence of substances toxic to plants. Texture of the soil material and its content of stone fragments affect suitability. Also considered in the ratings is damage that can result at the area from which topsoil is taken.

Sand and gravel are used in great quantities in many kinds of construction. The ratings provide guidance about where to look for probable sources. A soil rated as a *good* or *fair* source generally has a layer of sand or gravel at least 3 feet thick, the top of which is within a depth of 5 feet. The ratings do not take into account thickness of overburden, location of the water table, or other factors that affect mining of the materials, and neither do they indicate quality of the deposit.

Road fill is soil material used in embankments for roads. The suitability ratings reflect the predicted performance of soil after it has been placed in an embankment that has been properly compacted and provided with adequate drainage and the relative ease of excavating the material at borrow areas.

Soil properties that most affect design and construction of roads and streets are load-supporting capacity and stability of the subgrade and the workability and quantity of cut and fill material available. The AASHTO and Unified classifications of the soil material and the shrink-swell potential indicate traffic-supporting capacity. Wetness and flooding affect stability of the material. Slope, depth to hard rock, content of stones and rocks, and wetness affect ease of excavation and amount of cut and fill needed to reach an even grade.

Pond reservoir areas hold water behind a dam or embankment. Soils suitable for pond reservoir areas have low seepage, which is related to their permeability and depth to fractured or permeable bedrock or other permeable material.

Embankments, dikes, and levees require soil material that is resistant to seepage and piping and that has favorable stability, shrink-swell potential, shear

test data

to standard procedures of the American Association of State Highway and Transportation Officials (AASHTO)]

Mechanical analysis [2]								Liquid limit [4]	Plasticity index [5]	Classification	
Percentage passing sieve [3]—				Percent smaller than–							
No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)	0.05 mm	0.02 mm	0.005 mm	0.002 mm			AASHTO [6]	Unified [7]
								Percent			
73	66	52	30	23.5	10.0	1.2	0.5	28	[8]NP	A–2–4(0)	SM
81	78	62	36	29.8	17.0	5.0	2.0	18	NP	A–4(0)	SM
86	80	33	11	5.3	2.9	----------	----------	28	NP	A–1–b(0)	SW–SM
46	38	15	7	4.3	1.8	----------	----------	27	NP	A–1–a(0)	GP–GM
97	93	77	47	38.0	16.5	3.0	1.2	21	NP	A–4(0)	SM
92	89	77	49	37.7	17.2	3.9	1.8	23	NP	A–4(0)	SM
98	98	93	27	13.0	2.0	.7	.5	NP	NP	A–2–4(0)	SM
----------	100	96	16	4.0	.5	.1	0	NP	NP	A–2–4(0)	SM

[3] Laboratory test data not corrected for amount discarded in field.
[4] Based on AASHTO Designation T 89–60 (*1*).
[5] Based on AASHTO Designation T 91–54 (*1*).
[6] Based on AASHTO Designation M 145–49 (*1*).
[7] Based on ASTM D 2487–69 (*2*).
[8] NP means nonplastic.

strength, and compaction characteristics. Stones or organic material in a soil are among factors that are unfavorable.

Drainage of cropland and pasture is affected by such soil properties as permeability, texture, and structure; depth to claypan, rock, or other layers that influence rate of water movement; depth to the water table; slope; stability in ditchbanks; susceptibility to stream overflow; and availability of outlets for drainage.

Irrigation of a soil is affected by such features as slope; susceptibility to stream overflow, water erosion, or soil blowing; soil texture; content of stones; accumulation of salts and alkali; depth of root zone; rate of water intake at the surface; permeability below the surface layer and in fragipans or other layers that restrict movement of water; amount of water held available to plants; and need for drainage, or depth to water table or bedrock.

Terraces and diversions are embankments, or ridges, constructed across the slope to intercept runoff so that it soaks into the soil or flows slowly to a prepared outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to bedrock or to other unfavorable material; presence of stones; permeability; and resistance to water erosion, soil slipping, and soil blowing. A soil suitable for these structures provides outlets for runoff, and establishing plant cover on such a soil is not difficult.

Grassed waterway layout and construction are affected by such soil properties as texture, depth, and erodibility of the soil material; presence of stones or rock outcrops; and the steepness of slopes. Other factors affecting grassed waterways are permeability, seepage, natural soil drainage, available water capacity, susceptibility to siltation, and the ease of establishing and maintaining vegetation.

Soil test data

Table 7 contains engineering test data for some of the major soil series in Kennebec County. The tests were made to help evaluate the soils for engineering purposes. The engineering classifications are based on data

obtained by mechanical analyses and by tests to determine the liquid limit and plastic limit of the soils. The mechanical analyses were made by combined sieve and hydrometer methods.

Moisture-density data are important in earthwork. If a soil material is compacted at a successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material increases until the *optimum moisture content* is reached. After that, density decreases with increase in moisture content. The highest dry density obtained in the compactive test is termed *maximum dry density*. As a rule, maximum strength of earthwork is obtained if the soil is compacted to the maximum dry density.

Tests to determine liquid limit and plastic limit measure the effect of water on the consistence of soil material. The plastic limit is the moisture content at which the soil material changes from a semisolid to the plastic state. The liquid limit is the moisture content at which the soil material changes from a plastic to a liquid state. The plasticity index is the numerical difference in moisture content between the liquid limit and the plastic limit.

Land Use Planning

Kennebec County is primarily a rural area, although it includes the urban centers of Augusta-Hallowell-Gardiner, Waterville-Winslow, Winthrop, and Oakland. There is a slow increase in population and a trend from urban areas into surrounding rural land. Development of residential, commercial, and recreational sites creates a need for useful and reliable nonfarm soils information.

This section provides information on the properties of soils and their effect on selected nonfarm uses of land. It will help community planners, developers, and individual landowners determine the most suitable land use for a particular area. Other useful information is on the soil maps and in other parts of the survey, particularly the sections "Description of the Soils," and "Engineering Uses of the Soils."

Table 8 is a guide to evaluating soils for specified nonfarm uses according to the degree and kind of limitations that affect them. These limitations are rated slight, moderate, or severe. *Slight* indicates that the soil has few or no limitations and is considered desirable for the use named. *Moderate* indicates that a hazard exists, but that it can be overcome or corrected. *Severe* indicates that use of the soil is seriously limited by a hazard or restriction that is difficult to overcome. The source of cover material for area-type sanitary landfills is rated as good, fair, or poor.

Any given soil property does not restrict all types of land use planning equally. For example, slow permeability and impeded drainage that are moderate limitations for many uses can severely limit the use of a soil for the disposal of sewage effluent from septic tanks.

Following are explanations of some of the column headings in table 8.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into natural soil. The soil material from a depth of 18 inches to 6 feet is evaluated. The soil properties considered are those that affect both absorption of effluent and construction and operation of the system. Properties that affect absorption are permeability, depth to water table or rock, and susceptibility to flooding. Slope affects layout and construction and also the risk of soil erosion, lateral seepage, and downslope flow of effluent. Large rocks or boulders increase construction costs.

Sewage lagoons are shallow ponds constructed to hold sewage within a depth of 2 to 5 feet long enough for bacteria to decompose the solids. A lagoon has a nearly level floor; its sides, or embankments, are of soil material compacted to medium density; and the pond is protected from flooding. Properties that affect the pond floor are permeability, organic matter, and slope; and if the floor needs to be leveled, depth to bedrock becomes important. The soil properties that affect the embankment are the engineering properties of the embankment material as interpreted from the Unified Soil Classification and the amount of stones, if any, that influence the ease of excavation and compaction of the embankment material.

Table 8 shows the limitations of the soil for buildings of three stories or less, particularly houses with basements and small commercial buildings with foundation footings on undisturbed soil. Features that affect the suitability of the soil for construction are its capacity to support load and resist settlement under load and ease of excavation. Specific soil characteristics that affect the suitability of the soil for buildings are stability of the soil, depth to bedrock, depth to the water table, susceptibility to flooding, shrink-swell potential, wetness, density, plasticity, slope, drainage, texture, stoniness, and rockiness. Potential frost action also affects the use of the soil, but most homes are designed to overcome this limitation.

Shallow excavations are those that require digging or trenching to a depth of less than 5 feet; for example, excavations for pipelines, sewer lines, phone and power transmission lines, basements, open ditches, and cemeteries. Desirable soil properties are good workability, moderate resistance to sloughing, gentle slopes, absence of rock outcrops or big stones, and freedom from flooding or absence of a high water table.

Trench-type sanitary landfill is a method of disposing of refuse in dug trenches. The waste is spread in thin layers, compacted, and covered with soil throughout the disposal period. Considered in the ratings in table 8 are depth to the water table, drainage, hazard of flooding, permeability, slope, texture of the soil material, depth to bedrock, stoniness, and rockiness.

In the area-type sanitary landfill, refuse is placed on the surface of the soil in successive layers and covered daily, generally by imported material. A final cover of soil material at least 2 feet thick is placed over the fill when it is completed. The soil under the proposed site should be investigated to make sure that leachates from the landfill cannot penetrate the soil and thereby pollute water supplies. Considered in the ratings in table 8 are depth to the water table, drainage, hazard of flooding, permeability, and slope.

The cover material for area-type sanitary landfills generally must be obtained from a source away from the site where the refuse is placed. The soil characteristics needed for both daily and final cover material are nearly enough alike that each soil is given one rating

that applies to both. Terms used are good, fair, and poor. Considered in the ratings are consistence, texture, thickness of the material, the percentage of coarse fragments, stoniness, slope, and drainage.

Recreational Development

Knowledge of soils is necessary in planning, developing, and maintaining areas used for recreation. The limitations of the soils that affect their suitability for camp areas, playgrounds, and other construction for recreation are given in table 9. The degree of the limitation is expressed as slight, moderate, or severe. It is assumed that a good cover of vegetation can be established and maintained. A rating of *slight* means that soil properties are generally favorable and limitations are so minor that they can be easily overcome. A rating of *moderate* means that limitations can be overcome or modified by planning, design, or by special maintenance. A rating of *severe* means that limitations can only be overcome by costly soil reclamation, special design, intense maintenance, or a combination of these.

Campsites are used intensively for tents, small camp trailers, and the accompanying activities of outdoor living. Little preparation of the site is required, other than shaping and leveling for tent and parking areas. Camp areas are subject to heavy foot traffic and limited vehicular traffic. The best soils have mild slopes, good drainage, and a surface free of rocks and coarse fragments, and are not subject to flooding during periods of heavy use. Their surface is firm after rain but not dusty when dry.

Recreation cottages without basements are single story buildings constructed on either slabs or pilings. Onsite waste disposal is not a consideration in the rating. Soils that have slight limitations have gradual slopes, good drainage, a surface free of rock outcrops and stones, freedom from flooding, low potential of frost action, and are deep to bedrock.

Playgrounds are areas used intensively for baseball, football, badminton, and other organized games. Soils suitable for this use must withstand intensive foot traffic. The best soils have a nearly level surface free of coarse fragments and rock outcrops. They have good drainage and are not subject to flooding during periods of heavy use. Their surface is firm after rain but not dusty when dry. If grading and leveling are needed, depth to rock is important.

Lawns, landscaping, and golf fairways are areas subject to moderate foot traffic. It is assumed that only the soil material at the site will be utilized. No importation of fill or topsoil is considered in the ratings. Traps, roughs, and greens are not considered as part of the golf fairways. Soils that have slight limitations have a seasonal water table below a depth of 1½ feet; have gradual slopes; are more than 36 inches to bedrock; have few stones, rock outcrops, and coarse fragments; and seldom flood.

The suitability of a soil for ski slopes depends on slope gradient and ease of maintaining ski trails. It is assumed that the slopes will be maintained in grass sod to prevent erosion. Aspect and length of slope are not considered in the ratings and must be determined by onsite inspection. Soils with slight limitations have moderately steep to steep slopes, have few stones or rock outcrops, have a loamy surface layer, and are well drained or moderately well drained.

Wilderness tent sites are areas for general tenting where there has been no extensive development of the site and where areas are not expected to have heavy concentrated use. Soils that have slight limitations have gradual slopes, good drainage, few stones and rock outcrops, freedom from flooding during periods of use, and a loamy surface layer.

Unsealed privies are unlined pit-type toilets used for human waste material. The best soils for this use are nearly level to sloping, have good drainage, are more than 40 inches deep to bedrock, and are not subject to flooding.

Formation, Morphology, and Classification of the Soils

In this section the major features of soil formation are discussed in terms of their effect on the development of the soils in Kennebec County. The current system of classification is briefly described, and the soil series in the survey area are placed in some classes of that system. The soil series in the survey area, including a profile representative of each series, are described in the section "Description of the Soils."

Formation of the Soils

Soil is formed by the interaction of parent material, plant and animal life, climate, relief, and time (*6*). These factors control or influence the soil-forming processes of additions, losses, transfers, and alterations, and determine whether or not a horizon is faint or distinct. Generally the interaction of all the factors determines the kind of soil that forms in any given place, but the relative importance of each factor differs from place to place. In some places one or more of the factors may dominate the formation of a soil and determine most of its properties.

Soil formation begins with physical weathering. Large pieces of rock are broken into smaller pieces by hydration, differential expansion, frost wedging, and other forces. Glaciers acting as physical weathering agents ground large quantities of rock material and redistributed this over some areas as heterogeneous material, and over other areas as selectively sorted material (*4*). Most of the soils in Kennebec County formed in this glacial till or in water-deposited marine or lacustrine material. Plants and animals aid in the soil-forming process by providing organic matter.

Weathering causes chemical and physical changes in soils. These changes are reflected in the horizons, or layers, observed in most soils when a vertical cross section of the profile is exposed. The arrangement, color, thickness, consistence, structure, and other chemical and physical characteristics of these horizons are used as the basis for identifying and classifying soils.

Rock fragments and organic matter are chemically weathered by solution, oxidation, reduction, carbonation, and the action of weak acids, enzymes, and other chemical processes. Through chemical processes, nitrogen, phosphorus, potassium, sulfur, calcium, magne-

TABLE 8.—*Land use*

Soil series and map symbols	Limitations to use of the soils for—			
	Septic tank absorption fields	Sewage lagoons	Buildings of three stories or less[1]	
			Houses with basements	Small commercial buildings
Berkshire:				
BhB	Slight	Severe: moderately rapid to moderate permeability.	Moderate: moderate potential frost action.	Moderate: slope; moderate potential frost action.
BkB	Moderate: very stony	Severe: moderately rapid to moderate permeability.	Moderate: moderate potential frost action; very stony.	Moderate: slope; moderate potential frost action; very stony.
BkC	Moderate: slope; very stony.	Severe: moderately rapid to moderate permeability; slope.	Moderate: slope; moderate potential frost action; very stony.	Severe: slope
BkD	Severe: slope	Severe: moderately rapid to moderate permeability; slope.	Severe: slope	Severe: slope
Biddeford: Bo	Severe: slow to very slow permeability; seasonal high water table.	Slight	Severe: very poorly drained; high potential frost action.	Severe: very poorly drained; high potential frost action.
Buxton:				
BuB2	Severe: slow to very slow permeability; seasonal high water table.	Moderate: slope	Severe: seasonal high water table; high potential frost action.	Severe: seasonal high water table; high potential frost action.
BuC2	Severe: slow to very slow permeability; seasonal high water table.	Severe: slope	Severe: seasonal high water table; high potential frost action.	Severe: seasonal high water table; slope; high potential frost action.
Charlton: mapped only with Paxton soils. See that series.				
Deerfield: DeB	Severe: seasonal high water table.	Severe: seasonal high water table; very rapid to rapid permeability.	Severe: seasonal high water table.	Severe: seasonal high water table.
Hadley: Ha	Severe: common flooding.	Severe: common flooding.	Severe: common flooding; high potential frost action.	Severe: common flooding; high potential frost action.
Hartland:				
HfC	Moderate: slope; moderate to moderately slow permeability.	Severe: slope; possible sand and gravel below a depth of 60 inches.	Severe: high potential frost action.	Severe: slope; high potential frost action.
HfD	Severe: slope	Severe: slope; possible sand and gravel below a depth of 60 inches.	Severe: slope; high potential frost action.	Severe: slope; high potential frost action.

See footnotes at end of table.

planning.

Limitations to use of the soils for—Continued			Suitability as a source of cover material for area type landfill
Shallow excavations	Sanitary landfill		
	Trench type [2]	Area type	
Slight	Severe: moderately rapid to moderate permeability.	Severe: moderately rapid to moderate permeability.	Fair: coarse fragments.
Moderate: very stony	Severe: moderately rapid to moderate permeability.	Severe: moderately rapid to moderate permeability.	Fair: coarse fragments; very stony.
Moderate: slope; very stony.	Severe: moderately rapid to moderate permeability.	Severe: moderately rapid to moderate permeability.	Fair: coarse fragments; very stony; slope.
Severe: slope	Severe: moderately rapid to moderate permeability; slope.	Severe: moderately rapid to moderate permeability; slope.	Poor: slope.
Severe: very poorly drained; clayey material.	Severe: high water table; clayey material.	Severe: high water table.	Poor: very poorly drained.
Severe: seasonal high water table; clayey material.	Severe: seasonal high water table; clayey material.	Severe: seasonal high water table.	Fair: thickness of material.
Severe: seasonal high water table; clayey material.	Severe: seasonal high water table; clayey material.	Severe: seasonal high water table.	Fair: thickness of material; slope.
Severe: seasonal high water table; sandy material; cutbanks cave.	Severe: seasonal high water table; very rapid to rapid permeability.	Severe: seasonal high water table; very rapid to rapid permeability.	Fair: sandy material.
Severe: common flooding.	Severe: seasonal high water table; common flooding.	Severe: common flooding.	Good.
Moderate: slope	Slight: sand and gravel possible below a depth of 60 inches.	Moderate: slope	Fair: slope.
Severe: slope	Moderate: slope; sand and gravel possible below a depth of 60 inches.	Severe: slope	Poor: slope.

TABLE 8.—*Land use*

Soil series and map symbols	Limitations to use of the soils for—			
	Septic tank absorption fields	Sewage lagoons	Buildings of three stories or less [1]	
			Houses with basements	Small commercial buildings
Hinckley:				
HkB	Slight [3]	Severe: very rapid to rapid permeability.	Slight	Moderate: slope
HkC	Moderate: slope [3]	Severe: very rapid to rapid permeability; slope.	Moderate: slope	Severe: slope
HkD	Severe: slope [3]	Severe: very rapid to rapid permeability; slope.	Severe: slope	Severe: slope
Hollis:				
HrB	Severe: shallow to bedrock.	Severe: moderately rapid permeability; shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock.
HrC	Severe: shallow to bedrock.	Severe: moderately rapid permeability; shallow to bedrock; slope.	Severe: shallow to bedrock.	Severe: slope; shallow to bedrock.
HrD	Severe: slope; shallow to bedrock.	Severe: moderately rapid permeability; shallow to bedrock; slope.	Severe: slope; shallow to bedrock.	Severe: slope; shallow to bedrock.
HtB	Severe: shallow to bedrock; rockiness.	Severe: moderately rapid permeability; shallow to bedrock.	Severe: rockiness; shallow to bedrock.	Severe: rockiness, shallow to bedrock.
HtC	Severe: shallow to bedrock; rockiness.	Severe: moderately rapid permeability; shallow to bedrock; slope.	Severe: rockiness; shallow to bedrock.	Severe: slope; rockiness; shallow to bedrock.
HtD	Severe: slope; shallow to bedrock; rockiness.	Severe: moderately rapid permeability; shallow to bedrock; slope.	Severe: slope; rockiness; shallow to bedrock.	Severe: slope; rockiness; shallow to bedrock.
Limerick: Lk	Severe: high water table; frequent flooding.	Severe: high water table; frequent flooding.	Severe: poorly drained; frequent flooding; high potential frost action.	Severe: poorly drained; frequent flooding; high potential frost action.
Lyman:				
LyB	Severe: shallow to bedrock.	Severe: moderately rapid to moderate permeability; shallow to bedrock.	Severe: shallow to bedrock.	Severe: shallow to bedrock.
LyC	Severe: shallow to bedrock.	Severe: moderately rapid to moderate permeability; shallow to bedrock; slope.	Severe: shallow to bedrock.	Severe: slope; shallow to bedrock.
LyD	Severe: slope; shallow to bedrock.	Severe: moderately rapid to moderate permeability; shallow to bedrock; slope.	Severe: slope; shallow to bedrock.	Severe: slope; shallow to bedrock.

See footnotes at end of table.

planning—Continued

Limitations to use of the soils for—Continued			Suitability as a source of cover material for area type landfill
Shallow excavations	Sanitary landfill		
	Trench type [2]	Area type	
Severe: very gravelly sandy material; cutbanks cave.	Severe: very rapid to rapid permeability; very gravelly sandy material.	Severe: very rapid to rapid permeability.	Poor: sandy material; coarse fragments.
Severe: very gravelly sandy material; cutbanks cave.	Severe: very rapid to rapid permeability; very gravelly sandy material.	Severe: very rapid to rapid permeability.	Poor: sandy material; coarse fragments.
Severe: slope; very gravelly sandy material; cutbanks cave.	Severe: very rapid to rapid permeability; very gravelly sandy material; slope.	Severe: very rapid to rapid permeability; slope.	Poor: sandy material; coarse fragments; slope.
Severe: shallow to bedrock.	Severe: moderately rapid permeability; shallow to bedrock.	Severe: moderately rapid permeability.	Poor: thickness of material.
Severe: shallow to bedrock.	Severe: moderately rapid permeability; shallow to bedrock.	Severe: moderately rapid permeability.	Poor: thickness of material.
Severe: slope; shallow to bedrock.	Severe: moderately rapid permeability; shallow to bedrock.	Severe: moderately rapid permeability; slope.	Poor: thickness of material; slope.
Severe: shallow to bedrock; rockiness.	Severe: moderately rapid permeability; shallow to bedrock; rockiness.	Severe: moderately rapid permeability.	Poor: thickness of material.
Severe: shallow to bedrock; rockiness.	Severe: moderately rapid permeability; shallow to bedrock; rockiness.	Severe: moderately rapid permeability.	Poor: thickness of material.
Severe: slope; shallow to bedrock; rockiness.	Severe: moderately rapid permeability; slope; shallow to bedrock; rockiness.	Severe: moderately rapid permeability; slope.	Poor: thickness of material; slope.
Severe: poorly drained; frequent flooding.	Severe: high water table; frequent flooding.	Severe: high water table; frequent flooding.	Poor: poorly drained.
Severe: shallow to bedrock.	Severe: moderately rapid to moderate permeability; shallow to bedrock.	Severe: moderately rapid to moderate permeability.	Poor: thickness of material.
Severe: shallow to bedrock.	Severe: moderately rapid to moderate permeability; shallow to bedrock.	Severe: moderately rapid to moderate permeability.	Poor: thickness of material.
Severe: slope; shallow to bedrock.	Severe: moderately rapid to moderate permeability; shallow to bedrock.	Severe: moderately rapid to moderate permeability; slope.	Poor: thickness of material; slope.

TABLE 8.—*Land use*

Soil series and map symbols	Limitations to use of the soils for—			
	Septic tank absorption fields	Sewage lagoons	Buildings of three stories or less [1]	
			Houses with basements	Small commercial buildings
Lyman—Continued				
LzC	Severe: shallow to bedrock; rockiness.	Severe: moderately rapid to moderate permeability; shallow to bedrock; slope.	Severe: rockiness; shallow to bedrock.	Severe: slope; rockiness; shallow to bedrock.
Monarda: MoA, MrA	Severe: slow to very slow permeability; high water table.	Slight	Severe: poorly drained; high potential frost action.	Severe: poorly drained; high potential frost action.
Paxton:				
PbB, PdB	Severe: moderately slow to slow permeability.	Moderate: slope	Moderate: seasonal high water table; moderate potential frost action.	Moderate: slope; moderate potential frost action.
Charlton part of PdB	Slight	Severe: moderately rapid to moderate permeability.	Moderate: moderate potential frost action.	Moderate: slope; moderate potential frost action.
PbC, PdC2	Severe: moderately slow to slow permeability.	Severe: slope	Moderate: seasonal high water table; slope; moderate potential frost action.	Severe: slope.
Charlton part of PdC2	Moderate: slope	Severe: moderately rapid to moderate permeability; slope.	Moderate: slope; moderate potential frost action.	Severe: slope.
PcD, PdD2, PeD	Severe: moderately slow to slow permeability; slope.	Severe: slope	Severe: slope	Severe: slope.
Charlton part of PdD2, PeD	Severe: slope	Severe: moderately rapid to moderate permeability; slope.	Severe: slope	Severe: slope.
PcB, PeB	Severe: moderately slow to slow permeability.	Moderate: slope	Moderate: seasonal high water table; moderate potential frost action; very stony.	Moderate: slope; moderate potential frost action; very stony.
Charlton part of PeB	Moderate: very stony.	Severe: moderately rapid to moderate permeability.	Moderate: moderate potential frost action; very stony.	Moderate: slope; moderate potential frost action; very stony.
PcC, PeC	Severe: moderately slow to slow permeability.	Severe: slope	Moderate: seasonal high water table; slope; moderate potential frost action; very stony.	Severe: slope.
Charlton part of PeC	Moderate: slope; very stony.	Severe: moderately rapid to moderate permeability; slope.	Moderate: slope; moderate potential frost action; very stony.	Severe: slope.
Peru:				
PfB	Severe: moderately slow to slow permeability; seasonal high water table.	Moderate: slope	Severe: seasonal high water table; high potential frost action.	Severe: seasonal high water table; high potential frost action.

See footnotes at end of table.

planning—Continued

Limitations to use of the soils for—Continued			Suitability as a source of cover material for area type landfill
Shallow excavations	Sanitary landfill		
	Trench type [2]	Area type	
Severe: shallow to bedrock; rockiness.	Severe: moderately rapid to moderate permeability; shallow to bedrock; rockiness.	Severe: moderately rapid to moderate permeability.	Poor: thickness of material.
Severe: poorly drained.	Severe: high water table.	Severe: high water table.	Poor: thickness of material; poorly drained.
Moderate: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Fair: thickness of material; coarse fragments.
Slight	Severe: moderately rapid to moderate permeability.	Severe: moderately rapid to moderate permeability.	Fair: coarse fragments.
Moderate: seasonal high water table; slope.	Severe: seasonal high water table.	Severe: seasonal high water table.	Fair: thickness of material; coarse fragments; slope.
Moderate: slope	Severe: moderately rapid to moderate permeability.	Severe: moderately rapid to moderate permeability.	Fair: coarse fragments; slope.
Severe: slope	Severe: seasonal high water table.	Severe: seasonal high water table; slope.	Poor: slope.
Severe: slope	Severe: moderately rapid to moderate permeability.	Severe: moderately rapid to moderate permeability; slope.	Poor: slope.
Moderate: seasonal high water table; very stony.	Severe: seasonal high water table.	Severe: seasonal high water table.	Fair: thickness of material; coarse fragments; very stony.
Moderate: very stony.	Severe: moderately rapid to moderate permeability.	Severe: moderately rapid to moderate permeability.	Fair: coarse fragments; very stony.
Moderate: seasonal high water table; slope; very stony.	Severe: seasonal high water table.	Severe: seasonal high water table.	Fair: thickness of material; coarse fragments; very stony; slope.
Moderate: slope; very stony.	Severe: moderately rapid to moderate permeability.	Severe: moderately rapid to moderate permeability.	Fair: coarse fragments; very stony.
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Fair: thickness of material.

TABLE 8.—*Land use*

Soil series and map symbols	Limitations to use of the soils for—			
	Septic tank absorption fields	Sewage lagoons	Buildings of three stories or less[1]	
			Houses with basements	Small commercial buildings
Peru—Continued				
PkB	Severe: moderately slow to slow permeability; seasonal high water table.	Moderate: slope	Severe: seasonal high water table; high potential frost action.	Severe: seasonal high water table; high potential frost action.
PkC	Severe: moderately slow to slow permeability; seasonal high water table.	Severe: slope	Severe: seasonal high water table; high potential frost action.	Severe: seasonal high water table; slope; high potential frost action.
Ridgebury: RcA, RdA	Severe: moderately slow to slow permeability; high water table.	Slight	Severe: poorly drained; high potential frost action.	Severe: poorly drained; high potential frost action.
Rifle: RF	Severe: high water table; organic soil material.	Severe: high water table; organic soil material.	Severe: very poorly drained; organic soil material; high potential frost action.	Severe: very poorly drained; organic soil material; high potential frost action.
Saco: SA	Severe: high water table; frequent flooding.	Severe: high water table; frequent flooding.	Severe: very poorly drained; frequent flooding; high potential frost action.	Severe: very poorly drained; frequent flooding; high potential frost action.
Scantic: ScA	Severe: slow to very slow permeability; high water table.	Slight	Severe: poorly drained; high potential frost action.	Severe: poorly drained; high potential frost action.
Scarboro: Sd	Severe: high water table.	Severe: high water table; very rapid to rapid permeability.	Severe: very poorly drained.	Severe: very poorly drained.
Scio:				
SkB	Severe: moderate to moderately slow permeability; seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table; high potential frost action.	Severe: seasonal high water table; high potential frost action.
SkC2	Severe: moderately slow permeability; seasonal high water table.	Severe: seasonal high water table; slope.	Severe: seasonal high water table; high potential frost action.	Severe: seasonal high water table; slope; high potential frost action.
Suffield:				
SuC2	Severe: slow to very slow permeability.	Severe: slope	Severe: high potential frost action.	Severe: slope; high potential frost action.
SuD2	Severe: slow to very slow permeability; slope.	Severe: slope	Severe: slope; high potential frost action.	Severe: slope; high potential frost action.
SuE2	Severe: slow to very slow permeability; slope.	Severe: slope	Severe: slope; high potential frost action.	Severe: slope; high potential frost action.
Togus: TO	Severe: high water table; organic soil material.	Severe: high water table; organic soil material	Severe: very poorly drained; organic soil material; high potential frost action.	Severe: very poorly drained; organic soil material ; high potential frost action.

See footnotes at end of table.

planning—Continued

Limitations to use of the soils for—Continued			Suitability as a source of cover material for area type landfill
Shallow excavations	Sanitary landfill		
	Trench type [2]	Area type	
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Fair: thickness of material: very stony.
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Fair: thickness of material; very stony; slope.
Severe: poorly drained.	Severe: high water table.	Severe: high water table.	Poor: poorly drained.
Severe: very poorly drained; organic soil material.	Severe: high water table; organic soil material.	Severe: high water table.	Poor: organic soil material; very poorly drained.
Severe: very poorly drained; frequent flooding.	Severe: high water table; frequent flooding.	Severe: high water table; frequent flooding.	Poor: very poorly drained.
Severe: poorly drained; clayey material.	Severe: high water table; clayey material.	Severe: high water table.	Poor: poorly drained.
Severe: very poorly drained; sandy material; cutbanks cave.	Severe: high water table; very rapid to rapid permeability.	Severe: high water table; very rapid to rapid permeability.	Poor: sandy material; thickness of material; very poorly drained.
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Good.
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Fair: slope.
Moderate: slope	Moderate: clayey material.	Moderate: slope	Fair: thickness of material; slope.
Severe: slope	Moderate: slope; clayey material.	Severe: slope	Poor: slope.
Severe: slope	Severe: slope	Severe: slope	Poor: slope.
Severe: very poorly drained; organic soil material.	Severe: high water table; organic soil material.	Severe: high water table.	Poor: high content of organic soil material; very poorly drained.

TABLE 8.—*Land use*

Soil series and map symbols	Limitations to use of the soils for—			
	Septic tank absorption fields	Sewage lagoons	Buildings of three stories or less[1]	
			Houses with basements	Small commercial buildings
Vassalboro: VA	Severe: high water table; organic soil material.	Severe: high water table; organic soil material.	Severe: very poorly drained; organic soil material; high potential frost action.	Severe: very poorly drained; organic soil material; high potential frost action.
Windsor:				
WmB	Slight[1]	Severe: very rapid to rapid permeability.	Slight	Moderate: slope
WmC	Moderate: slope[3]	Severe: very rapid to rapid permeability; slope.	Moderate: slope	Severe: slope
WmD	Severe: slope[3]	Severe: very rapid to rapid permeability; slope.	Severe: slope	Severe: slope
Winooski: Wn	Severe: seasonal high water table; common flooding.	Severe: seasonal high water table; common flooding.	Severe: seasonal high water table; common flooding; high potential frost action.	Severe: seasonal high water table; common flooding; high potential frost action.
Woodbridge:				
WrB	Severe: moderately slow to slow permeability; seasonal high water table.	Moderate: slope	Severe: seasonal high water table; high potential frost action.	Severe: seasonal high water table; high potential frost action.
WrC	Severe: moderately slow to slow permeability; seasonal high water table.	Severe: slope	Severe: seasonal high water table; high potential frost action.	Severe: seasonal high water table; slope; high potential frost action.
WsB	Severe: moderately slow to slow permeability; seasonal high water table.	Moderate: slope	Severe: seasonal high water table; high potential frost action.	Severe: seasonal high water table; high potential frost action.
WsC	Severe: moderately slow to slow permeability; seasonal high water table.	Severe: slope	Severe: seasonal high water table; high potential frost action.	Severe: seasonal high water table; slope; high potential frost action.

[1] Potential frost action is considered in the ratings, but most homes and buildings are designed to overcome this limitation.
[2] Onsite studies of the underlying strata, water table, and hazards of aquifer pollution and drainage into ground water need to be made for landfills

sium, iron, molybdenum, zinc, manganese, and other elements are released in forms that can be utilized by plants.

Parent material

Parent material, the unconsolidated mass from which soils form, determines to a large extent the mineralogical and chemical composition of soils. It also affects the rate at which the soil-forming processes take place.

The soils of this survey area formed in glacial till, marine deposits, lacustrine deposits, glacial outwash material, alluvium deposited by streams, and accumulations of organic material. Most of the soil material was left when the last ice sheet, or glacier, melted prior

planning—Continued

Limitations to use of the soils for—Continued			Suitability as a source of cover material for area type landfill
Shallow excavations	Sanitary landfill		
	Trench type [2]	Area type	
Severe: very poorly drained; organic soil material.	Severe: high water table; organic soil material.	Severe: high water table.	Poor: organic soil material; very poorly drained.
Severe: sandy material; cutbanks cave.	Severe: very rapid to rapid permeability; sandy material.	Severe: very rapid to rapid permeability.	Fair: sandy material; thickness of material.
Severe: sandy material; cutbanks cave.	Severe: very rapid to rapid permeability; sandy material.	Severe: very rapid to rapid permeability.	Fair: sandy material; thickness of material; slope.
Severe: slope; sandy material; cutbanks cave.	Severe: very rapid to rapid permeability; slope; sandy material.	Severe: very rapid to rapid permeability; slope.	Poor: slope.
Severe: seasonal high water table; common flooding.	Severe: seasonal high water table; common flooding.	Severe: seasonal high water table; common flooding.	Good.
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Fair: thickness of material.
Severe: seasonal high water table.	Severe: seasonal water table.	Severe: seasonal high water table.	Fair: thickness of material; slope.
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Fair: thickness of material; very stony.
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Fair: thickness of material; very stony; slope.

[2] Pollution is a hazard to water supplies.

to 12,500 years ago. The alluvium is of relatively recent origin, and in some places new material is deposited from year to year.

The most extensive soils in this survey area are those that formed in glacial till. These soils vary in characteristics. Berkshire, Lyman, and Hollis soils are examples of soils that formed in glacial till. Paxton, Peru, and Ridgebury soils are among the soils in the survey area that are underlain by firm glacial till. Deerfield, Hinckley, and Windsor soils formed in glacial outwash deposits. They have a sandy solum and are commonly underlain by stratified sand and gravel. Hadley, Winooski, and Limerick soils are on bottom lands along streams. These soils formed in recent alluvium

TABLE 9.—*Limitation of the soils*

Soil series and map symbols	Campsites	Recreation cottages with no basement	Playgrounds
Berkshire:			
BhB	Slight	Moderate: moderate potential frost action.	Moderate: slope; more than 5 percent coarse fragments.
BkB	Moderate: very stony.	Moderate: moderate potential frost action; very stony.	Moderate: slope; more than 5 percent coarse fragments; very stony.
BkC	Moderate: slope; very stony.	Moderate: slope; moderate potential frost action; very stony.	Severe: slope
BkD	Severe: slope	Severe: slope	Severe: slope
Biddeford: Bo	Severe: very poorly drained.	Severe: very poorly drained; high potential frost action.	Severe: very poorly drained; slow to very slow permeability.
Buxton:			
BuB2	Severe: slow to very slow permeability.	Severe: seasonal high water table; high potential frost action.	Severe: slow to very slow permeability.
BuC2	Severe: slow to very slow permeability.	Severe: seasonal high water table; high potential frost action.	Severe: slow to very slow permeability; slope.
Charlton: Mapped only with Paxton soils; see that series.			
Deerfield: DeB	Moderate: seasonal high water table; loamy sand material.	Severe: seasonal high water table.	Severe: loamy sand
Hadley: Ha	Severe: common flooding.	Severe: common flooding; high potential frost action.	Moderate: common flooding.
Hartland:			
HfC	Moderate: moderately slow permeability; slope.	Severe: high potential frost action.	Severe: slope
HfD	Severe: slope	Severe: slope; high potential frost action.	Severe: slope
Hinckley:			
HkB	Slight	Slight	Moderate: slope; more than 5 percent coarse fragments.
HkC	Moderate: slope	Moderate: slope	Severe: slope
HkD	Severe: slope	Severe: slope	Severe: slope

for recreational development

Lawns, landscaping, and golf fairways	Ski slopes	Wilderness tent sites	Unsealed privy
Slight	Severe: slope	Slight	Slight.
Moderate: very stony.	Severe: slope	Moderate: very stony	Slight.
Moderate: slope; very stony.	Moderate: slope; very stony.	Severe: slope	Slight.
Severe: slope	Moderate: very stony	Severe: slope	Severe: slope.
Severe: seasonal high water table at or near surface.	Severe: slope; very poorly drained.	Severe: very poorly drained.	Severe: very poorly drained.
Moderate: seasonal high water table above a depth of 20 inches.	Severe: slope	Moderate: moderately well drained.	Severe: moderately well drained.
Moderate: seasonal high water table above a depth of 20 inches; slope.	Moderate: slope	Severe: slope	Severe: moderately well drained.
Severe: loamy sand	Severe: slope	Moderate: moderately well drained.	Severe: moderately well drained.
Moderate: common flooding.	Severe: slope	Severe: common flooding.	Severe: common flooding.
Moderate: slope	Moderate: slope	Severe: slope	Slight.
Severe: slope	Slight	Severe: slope	Severe: slope.
Moderate: more than 15 percent coarse fragments.	Severe: slope	Slight	Slight.
Moderate: slope; more than 15 percent coarse fragments.	Moderate: slope; excessively drained.	Severe: slope	Slight.
Severe: slope	Moderate: excessively drained.	Severe: slope	Severe: slope.

TABLE 9.—*Limitation of the soils for*

Soil series and map symbols	Campsites	Recreation cottages with no basement	Playgrounds
Hollis:			
HrB	Slight	Severe: shallow to bedrock.	Severe: shallow to bedrock.
HrC	Moderate: slope	Severe: shallow to bedrock.	Severe: slope; shallow to bedrock.
HrD	Severe: slope	Severe: slope; shallow to bedrock.	Severe: slope; shallow to bedrock.
HtB	Moderate: rockiness	Severe: rockiness; shallow to bedrock.	Severe: shallow to bedrock; rockiness.
HtC	Moderate: slope; rockiness.	Severe: rockiness; shallow to bedrock.	Severe: slope; shallow to bedrock; rockiness.
HtD	Severe: slope	Severe: slope; rockiness; shallow to bedrock.	Severe: slope; shallow to bedrock; rockiness.
Limerick: Lk	Severe: poorly drained; frequent flooding.	Severe: poorly drained; frequent flooding; high potential frost action.	Severe: poorly drained; frequent flooding.
Lyman:			
LyB	Slight	Severe: shallow to bedrock.	Severe: shallow to bedrock.
LyC	Moderate: slope	Severe: shallow to bedrock.	Severe: slope; shallow to bedrock.
LyD	Severe: slope	Severe: slope; shallow to bedrock.	Severe: slope; shallow to bedrock.
LzC	Moderate: slope; rockiness.	Severe: rockiness; shallow to bedrock.	Severe: slope; shallow to bedrock; rockiness.
Monarda:			
MoA, MrA	Severe: poorly drained; slow to very slow permeability.	Severe: poorly drained; high potential frost action.	Severe: poorly drained; slow to very slow permeability.
Paxton:			
PbB, PdB	Moderate: moderately slow to slow permeability.	Moderate: moderate potential frost action.	Moderate: slope; more than 5 percent coarse fragments.
Charlton part of PdB	Slight	Moderate: moderate potential frost action.	Moderate: slope; more than 5 percent coarse fragments.
PbC, PdC2	Moderate: moderately slow to slow permeability; slope.	Moderate: slope; moderate potential frost action.	Severe: slope
Charlton part of PdC2	Moderate: slope	Moderate: slope; moderate potential frost action.	Severe: slope
PdD2 (Paxton and Charlton parts)	Severe: slope	Severe: slope	Severe: slope

recreational development—Continued

Lawns, landscaping, and golf fairways	Ski slopes	Wilderness tent sites	Unsealed privy
Severe: shallow to bedrock.	Severe: slope	Slight	Severe: shallow to bedrock.
Severe: shallow to bedrock.	Moderate: slope; somewhat excessively drained.	Severe: slope	Severe: shallow to bedrock.
Severe: slope; shallow to bedrock.	Moderate: somewhat excessively drained.	Severe: slope	Severe: slope; shallow to bedrock.
Severe: shallow to bedrock; rockiness.	Severe: slope; rockiness.	Moderate: rockiness	Severe: shallow to bedrock.
Severe: shallow to bedrock; rockiness.	Sevtre: rockiness	Severe: slope	Severe: shallow to bedrock.
Severe: slope; shallow to bedrock; rockiness.	Severe: rockiness	Severe: slope	Severe: slope; shallow to bedrock.
Severe: high water table above a depth of 20 inches; frequent flooding.	Severe: slope; poorly drained.	Severe: frequent flooding.	Severe: poorly drained; frequent flooding.
Severe: shallow to bedrock.	Severe: slope	Slight	Severe: shallow to bedrock.
Severe: shallow to bedrock.	Moderate: slope; somewhat excessively drained.	Severe: slope	Severe: shallow to bedrock.
Severe: slope; shallow to bedrock.	Moderate: somewhat excessively drained.	Severe: slope	Severe: slope; shallow to bedrock.
Severe: shallow to bedrock; rockiness.	Severe: rockiness	Severe: slope	Severe: shallow to bedrock.
Severe: high water table above a depth of 20 inches.	Severe: slope; poorly drained.	Severe: poorly drained.	Severe: poorly drained.
Moderate: coarse fragments.	Severe: slope	Slight	Slight.
Slight	Severe: slope	Slight	Slight.
Moderate: slope; coarse fragments.	Moderate: slope	Severe: slope	Slight.
Moderate: slope	Moderate: slope	Severe: slope	Slight.
Severe: slope	Slight	Severe: slope	Severe: slope.

TABLE 9.—*Limitation of the soils for*

Soil series and map symbols	Campsites	Recreation cottages with no basement	Playgrounds
Paxton—Continued			
PcB, PeB	Moderate: moderately slow to slow permeability; very stony.	Moderate: moderate potential frost action; very stony.	Moderate: slope; more than 5 percent coarse fragments; very stony.
Charlton part of PeB	Moderate: very stony.	Moderate: moderate potential frost action; very stony.	Moderate: slope; more than 5 percent coarse fragments; very stony.
PcC, PeC	Moderate: moderately slow to slow permeability; slope; very stony.	Moderate: slope; moderate potential frost action; very stony.	Severe: slope
Charlton part of PeC	Moderate: slope; very stony.	Moderate: slope; moderate potential frost action; very stony.	Severe: slope
PcC, PeD (Paxton and Charlton parts of PeD)	Severe: slope	Severe: slope	Severe: slope
Peru:			
PfB	Moderate: seasonal high water table; moderately slow to slow permeability.	Severe: seasonal high water table; high potential frost action.	Moderate: moderately slow to slow permeability; slope; more than 5 percent coarse fragments.
PkB	Moderate: seasonal high water table; moderately slow to slow permeability; very stony.	Severe: seasonal high water table; high potential frost action.	Moderate: moderately slow to slow permeability; slope; more than 5 percent coarse fragments; very stony.
PkC	Moderate: seasonal high water table; moderately slow to slow permeability; slope; very stony.	Severe: seasonal high water table; high potential frost action.	Severe: slope
Ridgebury: RcA, RdA	Severe: poorly drained.	Severe: poorly drained; high potential frost action.	Severe: poorly drained.
Rifle: RF	Severe: organic soil material; very poorly drained.	Severe: very poorly drained; organic soil material; high potential frost action.	Severe: very poorly drained; organic soil material.
Saco: SA	Severe: very poorly drained; frequent flooding.	Severe: very poorly drained; frequent flooding; high potential frost action.	Severe: very poorly drained; frequent flooding.
Scantic: ScA	Severe: poorly drained; slow to very slow permeability.	Severe: poorly drained; high potential frost action.	Severe: poorly drained; slow to very slow permeability.
Scarboro: Sd	Severe: very poorly drained.	Severe: very poorly drained.	Severe: very poorly drained.

recreational development—Continued

Lawns, landscaping, and golf fairways	Ski slopes	Wilderness tent sites	Unsealed privy
Moderate: very stony; coarse fragments.	Severe: slope	Moderate: very stony	Slight.
Moderate: very stony.	Severe: slope	Moderate: very stony	Slight.
Moderate: slope; very stony; coarse fragments.	Moderate: slope; very stony.	Severe: slope	Slight.
Moderate: very stony; slope.	Moderate: slope; very stony.	Severe: slope	Slight.
Severe: slope	Moderate: very stony	Severe: slope	Severe: slope.
Slight	Severe: slope	Moderate: moderately well drained.	Severe: moderately well drained.
Moderate: very stony	Severe: slope	Moderate: moderately well drained; very stony.	Severe: moderately well drained.
Moderate: slope, very stony.	Moderate: slope; very stony.	Severe: slope	Severe: moderately well drained.
Severe: high water table above a depth of 20 inches.	Severe: slope; poorly drained.	Severe: poorly drained.	Severe: poorly drained.
Severe: high water table at surface; high content of organic soil material.	Severe: slope; very poorly drained; high content of organic soil material.	Severe: poorly drained; high content of organic soil material.	Severe: very poorly drained.
Severe: high water table at or near the surface; frequent flooding	Severe: slope; very poorly drained.	Severe: very poorly drained; frequent flooding.	Severe: very poorly drained; frequent flooding.
Severe: high water table above a depth of 20 inches.	Severe: slope; poorly drained.	Severe: poorly drained.	Severe: poorly drained.
Severe: high water table at or near surface.	Severe: slope; very poorly drained.	Severe: very poorly drained.	Severe: very poorly drained.

TABLE 9.—*Limitation of the soils for*

Soil series and map symbols	Campsites	Recreation cottages with no basement	Playgrounds
Scio: SkB	Moderate: seasonal high water table; moderate to moderately slow permeability.	Severe: seasonal high water table; high potential frost action.	Moderate: moderate to moderately slow permeability.
SkC2	Moderate: seasonal high water table; moderately slow to slow permeability; slope.	Severe: seasonal high water table; high potential frost action.	Severe: slope
Suffield: SuC2	Severe: slow to very slow permeability.	Severe: high potential frost action.	Severe: slope; slow to very slow permeability.
SuD2, SuE2	Severe: slow to very slow permeability; slope.	Severe: slope; high potential frost action.	Severe: slope; slow to very slow permeability.
Togus: TO	Severe: very poorly drained; high content of organic soil material.	Severe: very poorly drained; high content of organic soil material; high potential frost action.	Severe: very poorly drained; high content of organic soil material.
Vassalboro: VA	Severe: very poorly drained; high content of organic soil material.	Severe: very poorly drained; high content of organic soil material; high potential frost action.	Severe: very poorly drained; high content of organic soil material.
Windsor: WmB	Moderate: loamy sand material.	Slight	Severe: loamy sand
WmC	Moderate: slope; loamy sand material.	Moderate: slope	Severe: slope; loamy sand.
WmD	Severe: slope	Severe: slope	Severe: slope; loamy sand.
Winooski: Wn	Severe: common flooding.	Severe: common flooding; high potential frost action.	Moderate: common flooding.
Woodbridge: WrB	Moderate: seasonal high water table; moderately slow to slow permeability.	Severe: high potential frost action.	Moderate: moderately slow to slow permeability; slope; more than 5 percent coarse fragments.
WrC	Moderate: seasonal high water table; moderately slow to slow permeability; slope.	Severe: high potential frost action.	Severe: slope
WsB	Moderate: seasonal high water table; moderately slow to slow permeability; very stony.	Severe: high potential frost action.	Moderate: moderately slow to slow permeability; slope; more than 5 percent coarse fragments; very stony.

recreational development—Continued

Lawns, landscaping, and golf fairways	Ski slopes	Wilderness tent sites	Unsealed privy
Slight	Severe: slope	Moderate: moderately well drained.	Severe: moderately well drained.
Moderate: slope	Moderate: slope	Severe: slope	Severe: moderately well drained.
Moderate: slope	Moderate: slope	Severe: slope	Slight.
Severe: slope	Slight	Severe: slope	Severe: slope.
Severe: high water table at surface; high content of organic soil material.	Severe: slope; very poorly drained; high content of organic soil material	Severe: very poorly drained; high content of organic soil material.	Severe: very poorly drained.
Severe: high water table at surface; high content of organic soil material.	Severe: slope; very poorly drained; high content of organic soil material.	Severe: very poorly drained; high content of organic soil material.	Severe: very poorly drained.
Severe: loamy sand	Severe: slope	Moderate: loamy sand	Slight.
Severe: loamy sand	Severe: loamy sand	Severe: slope	Slight.
Severe: slope; loamy sand.	Severe: loamy sand	Severe: slope	Severe: slope.
Moderate: common flooding.	Severe: slope	Severe: common flooding.	Severe: moderately well drained; common flooding.
Slight	Severe: slope	Moderate: moderately well drained.	Severe: moderately well drained.
Moderate: slope	Moderate: slope	Severe: slope	Severe: moderately well drained.
Moderate: very stony	Severe: slope	Moderate: moderately well drained; very stony.	Severe: moderately well drained.

TABLE 9.—*Limitation of the soils for*

Soil series and map symbols	Campsites	Recreation cottages with no basement	Playgrounds
Woodbridge—Continued WsC	Moderate: seasonal high water table; moderately slow to slow permeability; slope; very stony.	Severe: high potential frost action.	Severe: slope

deposited by the streams. They are medium textured and show only slight profile development. Togus soils formed in organic material. Lacustrine or marine deposits of silt and clay were laid down in areas once covered by water for a relatively long period. Buxton, Scantic, and Suffield soils formed in these deposits.

Plant and animal life

Plants, animals, bacteria, fungi, and other forms of life that live on and in the soils are active in the soil-forming process. Plant cover is generally responsible for the amount of organic matter and nutrients in the soil as well as for the color of the surface layer.

Earthworms, cicadas, and burrowing animals help to keep the soil open and porous. Bacteria and fungi decompose the organic matter and release nutrients for plants. The native forests have influenced soil formation in this survey area more than other living organisms. Man, however, has affected soil development by clearing the forests, cultivating, adding fertilizer, mixing some soil horizons, and moving soil material from place to place.

Climate

Temperature, precipitation, and wind are climatic factors that have affected the formation of soils in this survey area. The climate influences the rate of weathering and the decomposition of rocks, minerals, and organic matter. It also influences the kind and number of plants and animals in and on the soil, which in turn affect the characteristics of the soils (*10*). Climatic data for this county are given in the section "Additional Facts About the County."

Relief

Relief, including direction of slope, affects soil formation by its influence on drainage, runoff, erosion, plant cover, and soil temperature. The topography of Kennebec County is nearly level to very steep, and slope ranges from 0 to 45 percent. Generally the steeper the slope, the shallower the soil. Runoff is slow or ponded on many nearly level soils. These soils are poorly drained or very poorly drained. South- or west-facing slopes receive more direct sunshine and are warmer than north- or east-facing slopes. Permeability of the soil material and the length, steepness, and configuration of the slopes influence the kind of soil that is formed. Local differences in soils are most commonly caused by the differences in parent material and topography.

The effect of relief is reflected in the degree of development of the deep, sloping Scio, Paxton, and Woodbridge soils. Rifle soils are an example of deep, wet, organic soils in nearly level or depressional areas. Relief is also an important factor in the lack of soil development in some moderately steep, rocky areas. An example of this is Hollis-Rock outcrop complex.

Time

Time is required for the formation of soils. The length of time that the parent material has been in place is commonly reflected in the degree to which the soil profile has developed. The soils in this survey area have been forming since the retreat of the last glaciers, prior to 12,500 years ago.

The degree and depth of profile development generally indicate the maturity of a soil. Most soils on the flood plains are considered to be immature because they receive new sediment in periodic floods; well defined horizons have not formed; soil structure is weak; and the differences in the color of the horizons are only slight. Hadley soils are examples of soils that formed on flood plains and have had their soil material changed only slightly by weathering. Some of the soils overlying glacial till, such as Berkshire and Peru soils, show a strong degree of weathering, but the depth of the weathering is only about 23 inches. These soils are considered to be more mature than Hadley soils.

Morphology of the Soils

A soil profile is a succession of layers, or horizons, that extend from the surface downward. Each horizon in a profile differs in one or more properties. These differences show the effect of the soil-forming processes on the development of the horizons.

Most soil profiles have three major horizons, the A, B, and C horizons (*3, 12*). The A horizon is the surface mineral layer. The mineral layer of maximum organic-matter content at or near the surface is the A1 horizon. The layer of maximum leaching, or eluviation, of clay, iron, and organic matter is the A2 horizon and is commonly grayish, indicating intensive leaching.

The B horizon is generally below the A horizon and is commonly called the subsoil. It generally is a horizon of maximum accumulation, or illuviation, of clay, iron, aluminum, organic matter, or other compounds that have been leached from the A horizon. In some soils part of the B horizon is formed by alteration in place instead of by illuviation. The alteration may be a result

recreational development—Continued

Lawns, landscaping, and golf fairways	Ski slopes	Wilderness tent sites	Unsealed privy
Moderate: slope; very stony.	Moderate: slope; very stony.	Severe: slope	Severe: moderately well drained.

of oxidation and reduction of iron or weathering of clay minerals. The B horizon has about the same consistence as the A horizon, and is more friable than the C horizon except in sandy and gravelly soils. The dominant structure is granular except in the silty and clayey soils. The B horizon is generally darker than the C horizon.

The C horizon consists of material that has been slightly altered by the processes of soil formation.

Several processes were involved in the formation of soil horizons in Kennebec County. These processes include the accumulation of organic matter, the leaching of soluble salts, the reduction and transfer of iron, the formation of soil structure, and the translocation and loss of clay minerals, aluminum, silica, and iron in some places. These processes are continually taking place, generally at the same time throughout the profile. Time for these processes is measured in thousands of years.

The accumulation of organic matter in the upper part of the mineral soil results in a dark-colored surface layer and in the formation of an A1 horizon.

The well drained and moderately well drained soils have a dark reddish brown to olive brown subsoil. The reddish colors are caused mainly by thin coats of sesquioxides and organic matter on sand and silt grains. No reddish parent material has been found in Kennebec County from which the soils could have inherited the reddish colors. Some of the soils have a weak to moderate subangular blocky structure. The subsoil has a clay content equal to or only slightly more than that of the surface layer.

Most of the moderately well drained and poorly drained soils that formed in glacial till have a fragipan. The fragipan is firm or very firm and brittle when moist and hard when dry. The soil particles are so tightly packed that the bulk density is high and the pore space is low. The genesis of these horizons is not fully understood, but studies show that swelling and shrinking take place in alternating wet and dry periods. This may account for the tight packing of soil particles and also for a gross polygonal pattern of cracks in the fragipan. Clay, silica, and oxides of aluminum are the cementing agents that most likely cause brittleness and hardness (*5*).

Classification of the Soils

Classification consists of an orderly grouping of soils according to a system designed to make it easier to remember soil characteristics and interrelationships. Classification is useful in organizing and applying the results of experience and research. Soils are placed in classes for discussion in detailed soil surveys and for application of knowledge within farms and fields. The many thousands of narrow classes are then grouped into progressively fewer and broader classes in successively higher categories, so that information can be applied to large geographic areas.

Two systems of classifying soils have been used in the United States in recent years. The older system was adopted in 1938 (*3*) and was revised later (*9*). The system currently used by the National Cooperative Soil Survey was developed in the early sixties and was adopted in 1965. It is under continual study (*8, 13*).

The current system of classification has six categories. Beginning with the most inclusive, these categories are order, suborder, great group, subgroup, family, and series. The criteria for classification are soil properties that are observable or measurable, but the properties are selected so that soils of similar genesis are grouped together. The placement of some soil series in the current system of classification, particularly in families, may change as more precise information becomes available.

Table 10 shows the classification of each soil series of Kennebec County by family, subgroup, and order, according to the current system.

ORDER. Ten soil orders are recognized in this system. They are Alfisols, Aridisols, Entisols, Histosols, Inceptisols, Mollisols, Oxisols, Spodosols, Ultisols, and Vertisols. The properties used to differentiate the soil orders are those that tend to give broad climatic groupings of soils. The exceptions are Entisols, Histosols, and, to some extent, Inceptisols, which occur in many climates. Four of the soil orders are represented in this survey area. They are Entisols, Histosols, Inceptisols, and Spodosols.

Entisols are soils that have little or no evidence of horizon development. They are commonly on young, or recent, land surfaces.

Histosols are soils that are dominantly organic and commonly called bogs or peat and muck. They are comprised of layers of decomposed herbaceous and woody organic deposits.

Inceptisols are mineral soils in which horizons have definitely started to develop. They are generally on young, but not recent, land surfaces.

Spodosols are soils that have, at or near the surface, a horizon in which organic carbon and aluminum oxides have accumulated, as well as some iron oxides, but little or no additional clay.

TABLE 10.—*Classification of the soils*

Series	Family	Subgroup	Order
Berkshire	Coarse-loamy, mixed, frigid	Typic Haplorthods	Spodosols.
Biddeford	Fine, illitic, nonacid, mesic	Histic Humaquepts	Inceptisols.
Buxton	Fine, mixed, mesic	Aquic Dystric Eutrochrepts	Inceptisols.
Charlton	Coarse-loamy, mixed, mesic	Typic Dystrochrepts	Inceptisols.
Deerfield	Mixed, mesic	Aquic Udipsamments	Entisols.
Hadley	Coarse-silty, mixed, nonacid, mesic	Typic Udifluvents	Entisols.
Hartland	Coarse-silty, mixed, mesic	Dystric Eutrochrepts	Inceptisols.
Hinckley	Sandy-skeletal, mixed, mesic	Typic Udorthents	Entisols.
Hollis	Loamy, mixed, mesic	Lithic Dystrochrepts	Inceptisols.
Limerick	Coarse-silty, mixed, nonacid, mesic	Typic Fluvaquents	Entisols.
Lyman	Loamy, mixed, frigid	Lithic Haplorthods	Spodosols.
Monarda	Coarse-loamy, mixed, frigid	Aeric Fragiaquents	Inceptisols.
Paxton	Coarse-loamy, mixed, mesic	Typic Fragiochrepts	Inceptisols.
Peru	Coarse-loamy, mixed, frigid	Aquic Fragiorthods	Spodosols.
Ridgebury	Coarse-loamy, mixed, mesic	Aeric Fragiaquepts	Inceptisols.
Rifle	Euic	Typic Borohemists	Histosols.
Saco	Coarse-silty, mixed, nonacid, mesic	Fluvaquentic Humaquepts	Inceptisols.
Scantic	Fine, illitic, nonacid, mesic	Typic Haplaquepts	Inceptisols.
Scarboro	Sandy, mixed, mesic	Histic Humaquepts	Inceptisols.
Scio	Coarse-silty, mixed, mesic	Aquic Dystrochrepts	Inceptisols.
Suffield[1]	Coarse-silty over clayey, mixed, mesic	Dystric Eutrochrepts	Inceptisols.
Togus	Sandy or sandy-skeletal, mixed, euic	Terric Borofibrists	Histosols.
Vassalboro	Dysic	Typic Borofibrists	Histosols.
Windsor	Mixed, mesic	Typic Udipsamments	Entisols.
Winooski	Coarse-silty, mixed, nonacid, mesic	Aquic Udifluvents	Entisols.
Woodbridge	Coarse-loamy, mixed, mesic	Typic Fragiochrepts	Inceptisols.

[1] Suffield soils in Kennebec County are less deep to contrasting material and are more acid than Suffield soils in other survey areas. This difference does not alter the use or behavior of the soils.

SUBORDER. Each order is divided into suborders, primarily on the basis of those soil characteristics that indicate genetic similarities. The suborder narrows the broad climatic range permitted in the orders. The soil properties used to separate suborders mainly reflect either the presence or absence of waterlogging or soil differences resulting from the climate or vegetation.

GREAT GROUP. Each suborder is divided into great groups on the basis of uniformity in the kinds and sequence of major soil horizons and features. The horizons considered are those in which clay, iron, or humus has accumulated, or those that have pans restricting root growth or the movement of water. Some of the features considered are the self-mulching properties of clay, soil temperature, and major differences in chemical composition, mainly calcium, magnesium, sodium, and potassium. The great group is not shown in table 10, because it is the last word in the name of the subgroup.

SUBGROUP. Each great group is divided into subgroups. One subgroup represents the central (typic) concept of the group, and the other subgroups, called intergrades, represent soils that have properties mostly of one great group, but also one or more properties of another great group, suborder, or order. Intergrade subgroups are also used if soil properties are outside of the range of any other great group, suborder, or order.

FAMILIES. Families are established within a subgroup primarily on the basis of properties important to the growth of plants or the behavior of soils when used for engineering. Among the properties considered are texture, mineralogy, reaction, soil temperature, permeability, thickness of horizons, and consistence. Table 10 gives the family of each of the series represented in this county, though some family designations will be changed as more information is obtained.

Laboratory Data

Samples of Charlton, Paxton, and Woodbridge soils were taken at selected sites in this survey area and were analyzed in the laboratory. Five sites of each soil were sampled. Data obtained from these samples are published in Maine Agricultural Experiment Station Technical Bulletin No. 34 (7). The data are also applicable to Berkshire, Peru, Ridgebury, and other soils in the county that have properties similar to those of the soils tested. Charlton, Paxton, and Woodbridge soils make up about 33 percent of this survey area, and similar soils make up about 10 percent.

Additional Facts About the County

Many factors influence how people live and adjust to conditions that prevail in a given location. This section points out some of these factors that are important in Kennebec County—its farming, climate, geology, relief and drainage, and water supply.

Kennebec County is part of the land included in the Virginia Charter granted by James I, in 1606, and in the New England Charter granted in 1620. No permanent colony was settled until after the Plymouth council

granted the Pilgrims the area known as the Kennebeck Patent, or Kennebec Purchase, in 1629. The French and Indian wars retarded settling. In 1753 interest in the area increased and the land was surveyed into lots of as much as 250 acres for homesteading. Kennebec became the sixth county in the district of Maine in 1799. The area developed rapidly, and 1823 marked the opening of the Gardiner Lyceum, the first technical agricultural and industrial educational institution in North America. Scientific agriculture, chemistry, and mechanical and engineering crafts were taught there.

Water supplied power to operate sawmills and numerous manufacturing plants built along the waterways. Ice was harvested from the river and shipped world-wide from storehouses that lined the river banks. Kennebec Valley hay was shipped, via the river, to livery stables in Boston, New York, and Philadelphia.

During the past 100 years, the population of Kennebec County has increased 59 percent, or by about 42,000 people. Twelve towns increased in population during this period, and 15 decreased. Generally, most of the growth was in the larger communities, while most of the smaller towns lost population. Since 1920, the population of Kennebec County has grown by approximately 6,000 persons each decade.

Kennebec County is well supplied with such transport facilities as airways, railroads, highways, and waterways. Augusta and Waterville Airports offer direct flight service to Portland, Boston, and New York. Commuter flight connections are available to smaller cities in the state. Passenger bus lines operate regular schedules. Highways are numerous and are conveniently located to serve the entire county. Interstate Highway 95 crosses the area from the southern part of the county to the northeast corner, with eight interchanges available. A turnpike provides direct connections to points south of Augusta. There is a large "yard" at Waterville complete with maintenance and repair shops. Rail lines from Waterville to Portland run south through Oakland, Belgrade, Readfield, Winthrop, and Monmouth, and through Winslow, Vassalboro, Augusta, Hallowell, Farmingdale, and Gardiner. Northbound tracks lead through Benton and Clinton toward Bangor. Railroad traffic is entirely freight, since passenger service ceased in the 1950's.

The transportation facilities make markets readily available in New England and along the eastern seaboard area.

Farming

The major enterprise in Kennebec County is poultry; apple orchards and dairy and small scale vegetable farms are secondary. The trend is toward fewer farms of greater size. Competition from regions outside the county has caused farmers to use volume production methods to raise efficiency. The lack of locally grown grain creates a need to import feed for dairy and beef cattle, poultry, and other animals. Grassland and pasture crops grow well, but drying equipment is often needed to make high quality hay when drying weather is not ideal. Woodland products are important in Kennebec County, and the well-stocked forests provide sufficient raw materials for varied lumber industries.

Climate [5]

Cool to moderately warm summers, fairly cold winters, and generally ample rainfall characterize the climate of Kennebec County. The effect of the Atlantic Ocean as a moderating influence decreases northward. This marine influence is most important in summer, when southerly winds are most frequent. Air cooled by the Atlantic is generally not warmed to full summer inland temperatures as it approaches Kennebec County. In winter, northerly and westerly winds are dominant. Thus, the Atlantic's effect varies seasonally as well as with distance inland.

The climate is predominantly continental and provides a wide range of temperatures from winter to summer and from day to night. Day to day variation is also common. Kennebec County is near the favored paths of weather systems which alternately bring in warmer air from southerly directions and colder air from northerly directions.

Elevation and local topography affect weather and climate. Generally, temperatures are lower and precipitation is greater at higher elevations. The county's lowest elevations are cut by the Kennebec River, which drops from about 100 feet above sea level as it enters the county to tidal levels before it leaves. Most of the county lies between 100 and 300 feet in elevation, although many hills rise higher. Mt. McGaffey in the northwest rises to over 1,200 feet. Except for the tallest peaks, the county's range in elevation has no large-scale effect on weather. However, a principal mountain ridge that has some peaks topping 4,000 feet lies about 40 miles to the northwest. It serves as a partial barrier to air movements and is thus a climatic factor. Kennebec County is liberally supplied with lakes and ponds that provide local air cooling in summer but have slight influence in winter, especially after becoming frozen.

The terrain ranges from relatively flat to rolling and hilly and includes some marshes. Land configurations and soils as well as water bodies and elevation cause local variations in climate, affecting minimum temperatures and the dates of spring and fall freezes in particular. For example, an organic soil in a low basin may be a "frost pocket," and the frost-free period in such a basin is much shorter than that in a nearby area that has sloping sandy soils. These local variations in climate are important in the selection of the kinds and varieties of crops to be grown in any given area.

In Kennebec County, there are weather observation stations that have lengthy records at August, Gardiner, Waterville, and Winthrop. Gardiner and Winthrop data are similar to Waterville data and are not reported here.

Table 11 shows temperature and precipitation data recorded at Augusta and Waterville. The temperature data do not include the extreme high and low temperatures on record, but do include the probable high and low temperatures that can be expected to occur on 4 days in 2 years out of 10. These probable temperatures can be used to estimate the extremes that can be expected.

[5] By ROBERT E. LAUTZENHEISER, state climatologist, National Weather Service, Environmental Science Services Administration, U.S. Department of Commerce.

TABLE 11.—*Temperature*

[Columns A are data for Augusta;

Month	Temperature									
	Average daily—						2 years in 10 will have at at least 4 days with—			
	Maximum		Minimum		Mean		Maximum temperature equal to or higher than—		Minimum temperature equal to or lower than—	
	A	B	A	B	A	B	A	B	A	B
	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F
January	28.2	29.9	11.4	8.4	19.8	19.2	48	44	−10	−11
February	30.9	32.6	13.1	9.7	22.0	21.2	47	47	−8	−10
March	39.8	41.6	22.8	20.9	31.3	31.3	58	56	5	2
April	52.9	54.6	33.9	32.3	43.4	43.5	72	72	23	22
May	64.9	68.2	43.2	42.4	54.1	55.3	83	84	32	32
June	73.8	76.8	52.2	52.0	63.0	64.4	91	90	41	42
July	80.5	81.8	58.8	57.4	69.7	69.6	92	91	50	49
August	78.4	80.5	56.6	55.7	67.5	68.1	91	92	46	45
September	69.2	71.9	48.9	47.7	59.1	59.8	86	86	35	34
October	58.4	60.9	39.3	37.5	48.9	49.2	75	74	26	27
November	45.3	46.7	30.2	28.8	37.8	37.8	62	62	15	18
December	32.4	33.1	16.5	14.4	24.5	23.8	50	50	−3	−6
Year	54.6	56.6	35.6	33.9	45.1	45.3	[3]94	[3]94	[4]−13	[4]−19

[1] Less than one-half day.
[2] Trace.

The mean monthly temperature for the three summer months, June through August, is in the 60's. The warmest month, July, averages almost 70°F. An average summer has only a few days reaching 90° or higher in the cooler locations and up to 10 or 12 days at the warmer locations. Year to year occurrences vary greatly. The mercury may not reach 90° every summer, but it may do so 15 or 20 times during the warmest summers. Nights are almost always cool, even in the warmest summers. January, the coldest month, has a normal mean near 20°

Table 12 shows, by month, the average frequency of specified temperatures, the number of heating degree-days, and the number of growing degree-days. These are computed by recording the daily significant departure from a selected base temperature and summarizing these departures for the month and year. The temperature base selected and the departure recorded depend on the purpose. A base of 65° F is used for heating degree-days, as this is the lowest temperature at which no heat is required for homes.

Data on growing degree-days are useful for planning the planting and harvesting date of crops. Growing degree-days accumulate when the mean temperature is higher than the lowest temperature at which plants continue to grow. They are calculated by subtracting the base temperature from the actual mean for the day. No negative values are used. The accumulation is zero when the actual mean is lower than the base temperature. The data in the table are calculated from two standard bases: 40° for such cool-weather crops as grasses, potatoes, and peas; and 50° for such warm weather crops as corn. A day on which the mean temperature is 60° accounts for 20 growing degree-days for a cool-weather crop but only 10 for a warm-weather crop.

A substantial number of growing degree-days in a given month does not necessarily indicate that crops can be safely planted. The possibility of damaging freezes may still exist. Table 13 gives the probability of freezing temperatures after specified dates in spring and before specified dates in fall. For example, table 13 shows that at Augusta there are 8 chances in 10 that a 32° freeze will occur after April 23, and that by May 14 the chance is reduced to 1 in 10, or 10 percent. The date for a 50 percent chance is May 1. A 32° freeze recorded at a standard instrument shelter is generally seriously damaging to sensitive plants. Hardier plants withstand lower temperatures. For use in planning the management of plants that have varying degrees of hardiness, the table also contains the probabilities for various harder freezes, as low as 16°.

The average length of the season between 32° freezes is 140 days for much of Kennebec County, but it ranges from 130 days or less in the colder spots to 160 days in warmer spots. Much greater local variations occur, especially in low frost pockets. In low boggy areas, frost is a threat very late in spring and

and precipitation data

columns B are for Waterville]

Precipitation													
Average		1 year in 10 will have—				Average snowfall		Days with—					
		Less than—		More than—				Snowfall of 1 inch or more		Snow cover of 1 inch or more		Precipitation of 0.1 inch or more	
A	B	A	B	A	B	A	B	A	B	A	B	A	B
In	*In*	*In*	*In*	*In*	*In*	*In*	*In*						
3.46	2.85	1.5	1.3	5.6	4.2	21.9	18.2	7	5	27	28	8	7
3.04	2.68	1.4	1.6	5.5	4.2	22.0	17.7	6	5	26	28	6	6
3.30	2.91	1.4	1.7	7.0	5.4	13.4	12.5	4	4	22	21	7	7
3.30	3.31	1.6	1.4	6.0	5.7	2.2	2.9	1	1	4	5	8	7
3.81	3.34	1.3	1.3	7.5	6.1	.8	.4	(1)	(1)	(1)	(1)	8	8
3.23	2.91	1.5	1.3	6.0	4.8	0	0	0	0	0	0	7	7
3.36	3.07	1.0	1.4	6.2	5.3	0	0	0	0	0	0	5	7
2.92	2.96	.7	1.0	5.6	5.0	0	0	0	0	0	0	6	6
3.05	3.25	.9	1.4	6.6	5.6	0	0	0	0	0	0	6	6
3.43	3.62	1.2	1.8	6.0	6.3	(2)	.6	(1)	(1)	(1)	(1)	6	6
4.67	4.48	2.2	1.9	7.0	7.1	3.7	4.1	2	1	2	3	8	8
3.44	3.34	1.3	1.5	5.2	5.2	13.0	11.9	4	4	17	20	7	7
41.01	38.72	32.0	31.7	51.0	45.6	77.0	68.3	24	20	98	105	82	82

[3]Average annual highest temperature.
[4]Average annual lowest temperature.

very early in fall; it occurs even in summer in exceptional years.

The average annual precipitation is roughly 40 inches. Higher elevations may receive more than 40 inches and lower elevations slightly less. Precipitation data include the water equivalent of snowfall. The seasonal distribution is fairly even, but the fall season, September to November, receives slightly more than any of the other three seasons. The frequency of precipitation is not greater in fall, however, but is somewhat greater in winter and spring. The annual precipitation total is large compared to that of much of the country. It provides abundant water for homes and industry as well as for irrigation of crops during the generally short, but fairly common, dry spells in summer.

Snowfall varies considerably from year to year and from place to place. The average seasonal total snowfall ranges from 65 to 85 inches in Kennebec County. Season to season totals range from 50 percent to 150 percent of the long period average. A continuous snow cover of 1 inch or more can be expected to last one month or more nearly every winter. The average duration of such a cover ranges from about 80 to 100 days. This continuous snow cover begins, on the average, in the latter half of December and ends toward the end of March. The average seasonal maximum depth of snow on the ground is around 2 feet, but it may be deeper in higher wooded elevations. The average date of the maximum snow depth is the middle of February in openlands and is somewhat later in woodlands. The dates of maximum snow depth range widely from season to season. The maximum depth of snow in a winter of low snow accumulation is only about one-half foot; the depth is 4 feet or more in the snowiest winters.

Thunderstorms are the principal cause of damage to crops from wind and hail. The frequency varies considerably from year to year. Thunderstorms seldom occur in winter and are most frequent from May through August. Most of these storms do little or no damage, but instead bring beneficial rain. The heavy rains that accompany the more severe thunderstorms sometimes cause soil erosion and plant injury; total damage from these rains is greater than that caused by lightning. Spring and summer thunderstorms may be accompanied by hail. Although hail falls once or twice in an average year, the stones are seldom large enough or numerous enough to cause extensive damage; but in exceptional storms, hail may cause heavy damage to plants and property. Damaging wind or heavy rain caused by hurricanes affect this area an average of once in 10 or more years. Strong winds and heavy rains from coastal storms, or "northeasters," are more frequent, but generally do not cause heavy damage. Tornadoes have not been a serious problem, but may occur. For a given place, the annual chance of

TABLE 12.—*Frequencies of selected temperatures and average of heating degree-days and growing degree-days*

[Columns A are data for Augusta; columns B are for Waterville]

Month	Mean number of days with—								Accumulated heat units					
	Maximum temperature of—				Minimum temperature of—				Heating degree-days		Growing degree-days			
	90° F or higher		32° F or lower		32° F or lower		0° F or lower		Base 65° F		Base 40° F		Base 50° F	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
January	0	0	20	18	30	30	6	9	1,395	1,410	0	0	0	0
February	0	0	15	13	27	28	4	7	1,205	1,230	0	0	0	0
March	0	0	6	4	27	28	1	2	1,040	1,040	35	35	0	0
April	0	0	(1)	(1)	12	15	0	0	640	640	160	160	20	20
May	0	(1)	0	0	1	3	0	0	335	300	445	480	150	180
June	1	2	0	0	0	(1)	0	0	95	75	700	740	400	440
July	3	4	0	0	0	0	0	0	20	20	925	925	615	615
August	2	3	0	0	0	0	0	0	40	35	860	875	550	565
September	(1)	1	0	0	1	1	0	0	205	195	580	600	280	300
October	0	0	0	0	6	10	0	0	495	485	285	295	65	75
November	0	0	2	1	20	20	0	(1)	810	810	65	65	0	0
December	0	0	16	14	29	29	2	4	1,250	1,270	0	0	0	0
Year	6	10	59	50	153	164	13	22	7,530	7,510	4,055	4,175	2,080	2,195

[1] Less than one-half day.

damage from a tornado is estimated to be less than one in a thousand.

Geology [6]

The bedrock which underlies Kennebec County has a long and complex history. The original sedimentary rocks (conglomerate; quartzose and calcareous sandstones and wackes; siltstone; calcareous siltstone, shale, and limestone) and rocks with volcanic origins (felsic volcanics and tuffaceous sandstones) range in age from Middle Ordovician through Lower Devonian. Generally, the rocks become younger from northwest to southeast.

[6] By D. BRUCE CHAMPEON, geologist, Soil Conservation Service.

The rocks were tightly folded and intruded by granitic magmas during Lower Devonian time and then were subjected to alteration by regional metamorphic pressures during Permian time. The degree of alteration generally increases from northeast to southwest. Metamorphic rock types include quartzite, marble, slate, phyllite, schist, and gneiss.

Relief and Drainage

Elevation in Kennebec County ranges from sea level to more than 1,200 feet on McGaffey Mountain in Vienna. The Kennebec River flows south through a broad valley in which water-deposited gravel, sand, silt, and clay material form extensive flat areas

TABLE 13.—*Probabilities*

[Columns A are data for Augusta;

Probability	Dates for given probability and temperature			
	32° F or lower		28° F or lower	
	A	B	A	B
Spring:				
1 year in 10 later than	May 14	May 25	May 2	May 8
2 years in 10 later than	May 9	May 20	April 27	May 3
5 years in 10 later than	May 1	May 12	April 19	April 25
8 years in 10 later than	April 23	May 4	April 11	April 17
Fall:				
1 year in 10 earlier than	September 22	September 14	October 6	September 30
2 years in 10 earlier than	September 27	September 19	October 11	October 5
5 years in 10 earlier than	October 6	September 27	October 20	October 13
8 years in 10 earlier than	October 15	October 5	October 29	October 21

bordered in many places by steep gulley banks along the drainageways. Upland areas of glacial till are widely distributed throughout the valley and on the surrounding higher elevations.

Small rivers and streams flow into the Kennebec River and are carried to sea level at Augusta, or flow into tidewater below Augusta. Most of the county is in the Kennebec River watershed, but a small percentage drains through Androscoggin Lake and the Dead River in the Androscoggin River watershed. There are four major series of lakes and many smaller series and single lakes. Most lakes are less than 400 feet in elevation. A few are higher, and an extreme is Kimball Pond in Vienna at an elevation of 904 feet. The roughest topography and higher elevations are in the northwestern section of the county.

Water Supply

Available water supplies vary with the seasons. Ground water supplies are generally at their highest point late in fall and early in spring. In summer, the use of moisture by growing plants, and in winter, the lack of infiltration when the surface is frozen lower the water table. Rainfall during the growing season is usually adequate, but periods of two or three weeks without rain are not unusual.

Aquifers are apparent in the sand and gravel deposits and are less apparent in the areas underlain by shattered ledges or deep glacial till. Many springs are in the county, and some of the lakes are fed by springs in the lakebed. Many of the lakes have water levels controlled by dams, and the closely regulated water-flow system is used for water storage, recreation, and power facilities.

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Glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to bedrock if bedrock is less than 40 inches and is expressed as—

	Inches
Very low	Less than 2.4
Low	2.4–3.2
Moderate	3.2–5.2
High	5.2

of low temperatures

columns B are for Waterville]

Dates for given probability and temperature—Continued					
24° F or lower		20° F or lower		16° F or lower	
A	B	A	B	A	B
April 17	April 23	April 9	April 11	April 1	April 4
April 12	April 18	April 4	April 6	March 27	March 30
April 4	April 10	March 27	March 29	March 20	March 22
March 27	April 2	March 19	March 21	March 12	March 14
October 22	October 13	November 8	October 28	November 18	November 10
October 27	October 18	November 13	November 1	November 23	November 15
November 5	October 26	November 22	November 9	December 2	November 23
November 14	November 3	December 1	November 17	December 11	December 1

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically for long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients, as for example in "hillpeats" and "climatic moors."

Erosion. The wearing away of the land surface by running water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes a bare surface.

Esker (geology). A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Glacial outwash (geology). Gravel, sand, and silt, commonly stratified, deposited by melt water as it flows from glacial ice.

Glacial till (geology). Unassorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Gleyed soil. A soil having one or more neutral gray horizons as a result of waterlogging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent waterlogging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

O horizon.—An organic layer, fresh and decaying plant residue, at the surface of a mineral soil.

A horizon.—The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

A2 horizon.—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock com-

monly underlies a C horizon, but can be directly below an A or a B horizon.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—few, common, and many; size—fine, medium, and coarse; and contrast—faint, distinct, and prominent. The size measurements are of the diameter along the greatest dimension. Fine indicates less than 5 millimeters (about 0.2 inch); medium, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and coarse, more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material mixed with mineral soil material. The content of organic matter is more than 20 percent.

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Parent material. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Permeability. The quality that enables the soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Terms describing permeability are very slow (less than 0.06 inch), slow (0.06 to 0.20 inch), moderately slow (0.2 to 0.6 inch), moderate (0.6 to 2.0 inches), moderately rapid (2.0 to 6.0 inches), rapid (6.0 to 20 inches), and very rapid (more than 20 inches).

Piping. Moving water forms subsurface tunnels or pipelike cavities in the soil.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH		*pH*
Extremely acid	Below 4.5	Neutral	6.6 to 7.3
Very strongly acid	4.5 to 5.0	Mildly alkaline	7.4 to 7.8
Strongly acid	5.1 to 5.5	Moderately alkaline	7.9 to 8.4
Medium acid	5.6 to 6.0	Strongly alkaline	8.5 to 9.0
Slightly acid	6.1 to 6.5	Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: very coarse sand (2.0 millimeters to 1.0 millimeter); coarse sand (1.0 to 0.5 millimeter); medium sand (0.5 to 0.25 millimeter); fine sand (0.25 to 0.10 millimeter); very fine sand (0.10 to 0.05 millimeter); silt (0.05 to 0.002 millimeter); and clay (less than 0.002 millimeter).

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are—platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), and granular. Structureless soils are either single grained (each grain by itself, as in dune sand) or massive (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it can soak into the soil or flow slowly to a prepared outlet without harm. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Topsoil (engineering). Presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.

Water table, apparent. A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table, artesian. A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water table, perched. A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978 O—224-901

GUIDE TO MAPPING UNITS

For a full description of a mapping unit, read the description of the mapping unit and the description of the soil series to which the mapping unit belongs.

Map symbol	Mapping unit	Page	Capability subclass	Woodland group
			Symbol	Symbol
BhB	Berkshire fine sandy loam, 3 to 8 percent slopes	8	IIe	3o
BkB	Berkshire very stony fine sandy loam, 3 to 8 percent slopes	8	VIs	3o
BkC	Berkshire very stony fine sandy loam, 8 to 15 percent slopes	8	VIs	3o
BkD	Berkshire very stony fine sandy loam, 15 to 30 percent slopes	8	VIs	3r
Bo	Biddeford mucky peat	9	VIw	--
BuB2	Buxton silt loam, 3 to 8 percent slopes, eroded	10	IIw	4o
BuC2	Buxton silt loam, 8 to 15 percent slopes, eroded	10	IIIew	4r
DeB	Deerfield loamy fine sand, 0 to 8 percent slopes	11	IIIw	4o
Ha	Hadley silt loam	12	I	3o
HfC	Hartland very fine sandy loam, 8 to 15 percent slopes	13	IIIe	3r
HfD	Hartland very fine sandy loam, 15 to 25 percent slopes	13	IVe	3r
HkB	Hinckley gravelly sandy loam, 3 to 8 percent slopes	14	IIIs	5s
HkC	Hinckley gravelly sandy loam, 8 to 15 percent slopes	14	IVs	5s
HkD	Hinckley gravelly sandy loam, 15 to 30 percent slopes	14	VIs	5s
HrB	Hollis fine sandy loam, 3 to 8 percent slopes	15	IIIe	5d
HrC	Hollis fine sandy loam, 8 to 15 percent slopes	15	IVe	5d
HrD	Hollis fine sandy loam, 15 to 25 percent slopes	15	VIe	5d
HtB	Hollis-Rock outcrop complex, 3 to 8 percent slopes	15	VIs	5x
HtC	Hollis-Rock outcrop complex, 8 to 15 percent slopes	15	VIs	5x
HtD	Hollis-Rock outcrop complex, 15 to 30 percent slopes	15	VIs	5x
Lk	Limerick silt loam	16	IIIw	4w
LyB	Lyman loam, 3 to 8 percent slopes	17	IIIe	4d
LyC	Lyman loam, 8 to 15 percent slopes	17	IVe	4d
LyD	Lyman loam, 15 to 25 percent slopes	17	VIe	4d
LzC	Lyman-Rock outcrop complex, 8 to 15 percent slopes	17	VIs	4x
MoA	Monarda silt loam	18	IIIw	4w
MrA	Monarda very stony silt loam	18	VIIsw	4w
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	19	IIe	3o
PbC	Paxton fine sandy loam, 8 to 15 percent slopes	19	IIIe	3o
PcB	Paxton very stony fine sandy loam, 3 to 8 percent slopes	19	VIs	3o
PcC	Paxton very stony fine sandy loam, 8 to 15 percent slopes	19	VIs	3o
PcD	Paxton very stony fine sandy loam, 15 to 25 percent slopes	20	VIs	3r
PdB	Paxton-Charlton fine sandy loams, 3 to 8 percent slopes	20	IIe	3o
PdC2	Paxton-Charlton fine sandy loams, 8 to 15 percent slopes, eroded	20	IIIe	3o
PdD2	Paxton-Charlton fine sandy loams, 15 to 25 percent slopes, eroded	20	IVe	3r
PeB	Paxton-Charlton very stony fine sandy loams, 3 to 8 percent slopes	20	VIs	3o
PeC	Paxton-Charlton very stony fine sandy loams, 8 to 15 percent slopes	20	VIs	3o
PeD	Paxton-Charlton very stony fine sandy loams, 15 to 30 percent slopes	20	VIs	3r
PfB	Peru fine sandy loam, 3 to 8 percent slopes	21	IIw	3o
PkB	Peru very stony fine sandy loam, 3 to 8 percent slopes	21	VIs	3o
PkC	Peru very stony fine sandy loam, 8 to 15 percent slopes	22	VIs	3o
RcA	Ridgebury fine sandy loam	22	IIIw	4w
RdA	Ridgebury very stony fine sandy loam	22	VIIsw	4w
RF	Rifle mucky peat	23	VIIw	--
SA	Saco soils	24	VIw	--
ScA	Scantic silt loam	24	IVw	5w
Sd	Scarboro mucky peat	25	Vw	5w
SkB	Scio very fine sandy loam, 3 to 8 percent slopes	26	IIw	3o
SkC2	Scio very fine sandy loam, 8 to 15 percent slopes, eroded	26	IIIew	3r
SuC2	Suffield silt loam, 8 to 15 percent slopes, eroded	27	IIIe	5c
SuD2	Suffield silt loam, 15 to 25 percent slopes, eroded	27	IVe	5c
SuE2	Suffield silt loam, 25 to 45 percent slopes, eroded	27	VIe	5c
TO	Togus fibrous peat	28	VIIw	--
VA	Vassalboro fibrous peat	29	VIIw	--

Map symbol	Mapping unit	Page	Capability subclass	Woodland group
			Symbol	Symbol
WmB	Windsor loamy sand, 3 to 8 percent slopes	29	IIIs	5s
WmC	Windsor loamy sand, 8 to 15 percent slopes	29	IVs	5s
WmD	Windsor loamy sand, 15 to 30 percent slopes	29	VIs	5s
Wn	Winooski silt loam	30	IIw	3o
WrB	Woodbridge fine sandy loam, 3 to 8 percent slopes	31	IIw	3o
WrC	Woodbridge fine sandy loam, 8 to 15 percent slopes	31	IIIew	3o
WsB	Woodbridge very stony fine sandy loam, 3 to 8 percent slopes	31	VIs	3o
WsC	Woodbridge very stony fine sandy loam, 8 to 15 percent slopes	31	VIs	3o

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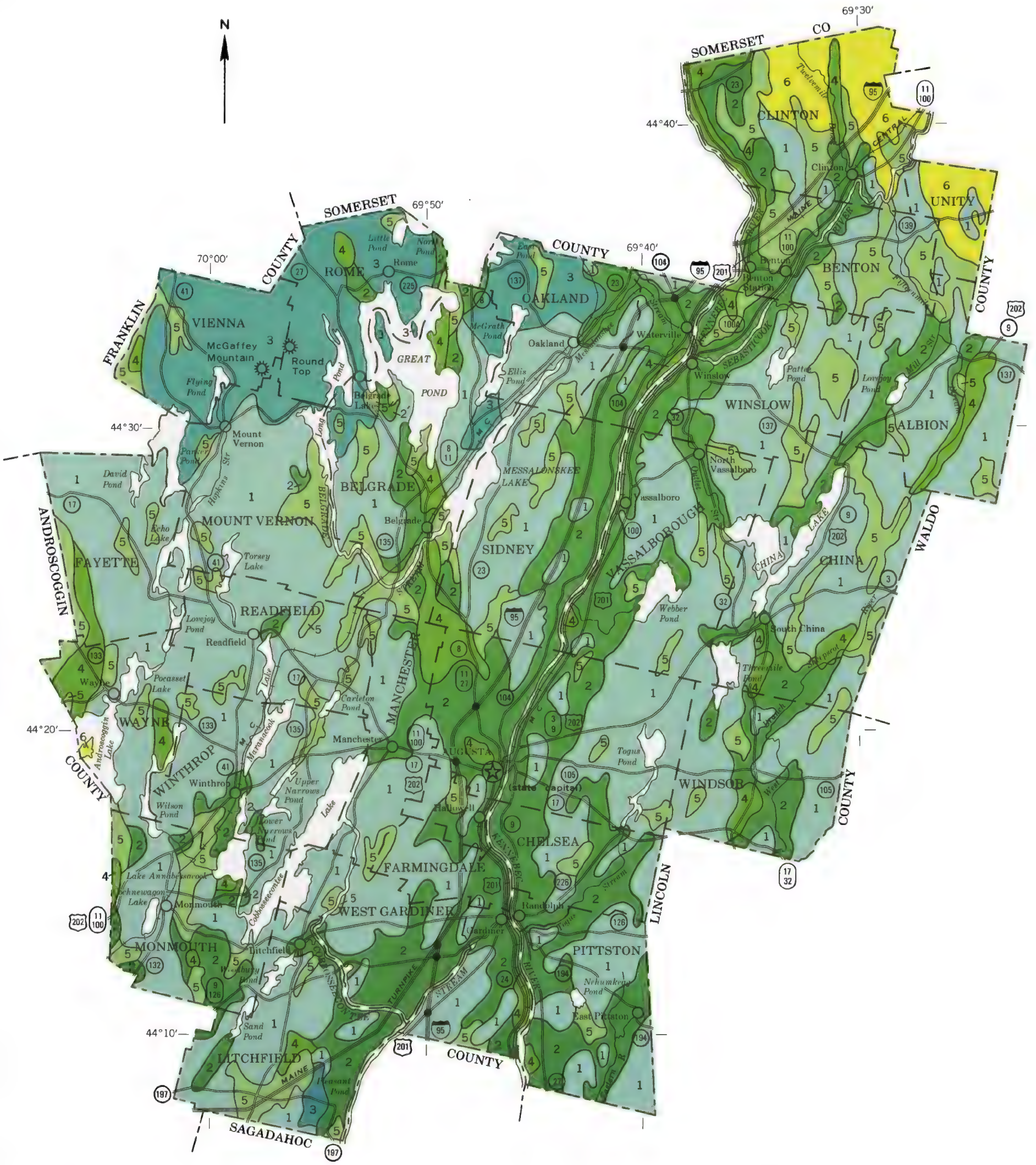
program information (e.g., Braille, large print, audiotape, etc.), please contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

Supplemental Nutrition Assistance Program

For additional information dealing with Supplemental Nutrition Assistance Program (SNAP) issues, call either the USDA SNAP Hotline Number at (800) 221-5689, which is also in Spanish, or the State Information/Hotline Numbers (http://directives.sc.egov.usda.gov/33085.wba).

All Other Inquiries

For information not pertaining to civil rights, please refer to the listing of the USDA Agencies and Offices (http://directives.sc.egov.usda.gov/33086.wba).



SOIL ASSOCIATIONS*

1 — Hollis-Paxton-Charlton-Woodbridge association: Shallow and deep, somewhat excessively drained to moderately well drained, gently sloping to moderately steep, moderately coarse textured soils; on hills and ridges

2 — Buxton-Scio-Scantic association: Deep, moderately well drained to poorly drained, nearly level to sloping, medium textured soils; in flat areas and near waterways

3 — Berkshire-Lyman-Peru association: Deep and shallow, somewhat excessively drained to moderately well drained, gently sloping to moderately steep, medium textured and moderately coarse textured soils; on hills and ridges

4 — Hinckley-Windsor-Deerfield association: Deep, excessively drained and moderately well drained, nearly level to moderately steep, coarse textured and moderately coarse textured soils; mainly on outwash terraces and plains

5 — Scantic-Ridgebury-Buxton association: Deep, poorly drained to moderately well drained, nearly level to sloping, medium textured soils in valleys and moderately coarse textured soils in flat areas or depressions on upland ridges

6 — Monarda association: Deep, poorly drained, nearly level, medium textured soils; on smooth, low, upland ridges

*The terms for texture used in soil associations apply to the surface layer of the major soils.

Compiled 1977

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

MAINE AGRICULTURAL EXPERIMENT STATION
MAINE SOIL AND WATER CONSERVATION COMMISSION

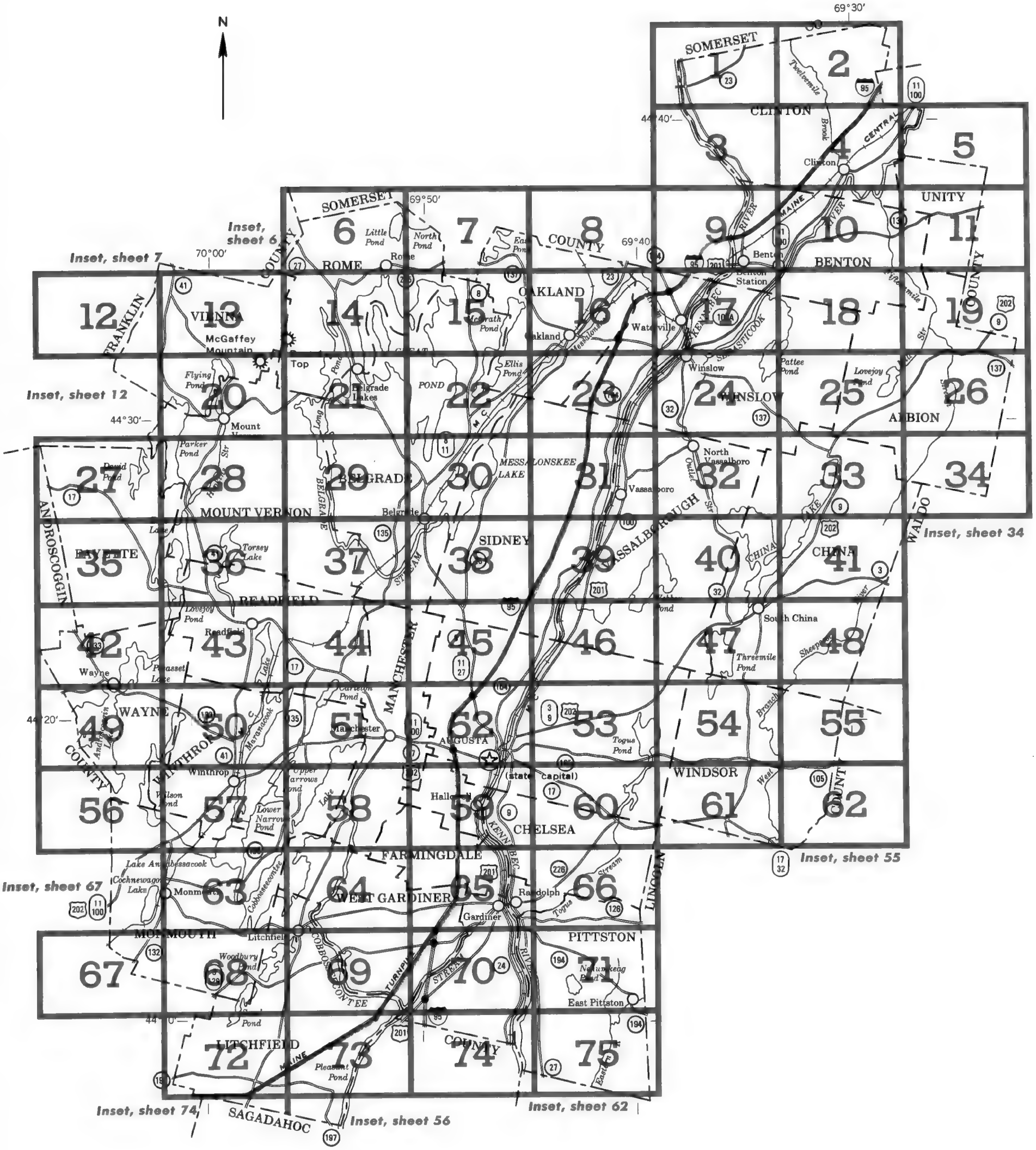
GENERAL SOIL MAP

KENNEBEC COUNTY, MAINE

Scale 1:253,440

1 0 1 2 3 4 Miles

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



INDEX TO MAP SHEETS

KENNEBEC COUNTY, MAINE

Scale 1:253,440

1 0 1 2 3 4 Miles

SOIL LEGEND

The first letter, always a capital, is the initial letter of the soil name. The second letter is a capital if the mapping unit is broadly defined; otherwise, it is a small letter. The third letter, always a capital, A, B, C, D or E shows the slope. Symbols without slope letters are those of nearly level soils. A final number, 2, in the symbol shows that the soil is eroded.

SYMBOL	NAME
BhB	Berkshire fine sandy loam, 3 to 8 percent slopes
BkB	Berkshire very stony fine sandy loam, 3 to 8 percent slopes
BkC	Berkshire very stony fine sandy loam, 8 to 15 percent slopes
BkD	Berkshire very stony fine sandy loam, 15 to 30 percent slopes
Bo	Biddeford mucky peat
BuB2	Buxton silt loam, 3 to 8 percent slopes, eroded
BuC2	Buxton silt loam, 8 to 15 percent slopes, eroded
DeB	Deerfield loamy fine sand, 0 to 8 percent slopes
Ha	Hadley silt loam
HfC	Hartland very fine sandy loam, 8 to 15 percent slopes
HfD	Hartland very fine sandy loam, 15 to 25 percent slopes
HkB	Hinckley gravelly sandy loam, 3 to 8 percent slopes
HkC	Hinckley gravelly sandy loam, 8 to 15 percent slopes
HkD	Hinckley gravelly sandy loam, 15 to 30 percent slopes
HrB	Hollis fine sandy loam, 3 to 8 percent slopes
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HrD	Hollis fine sandy loam, 15 to 25 percent slopes
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HtC	Hollis-Rock outcrop complex, 8 to 15 percent slopes
HtD	Hollis-Rock outcrop complex, 15 to 30 percent slopes
Lk	Limerick silt loam
LyB	Lyman loam, 3 to 8 percent slopes
LyC	Lyman loam, 8 to 15 percent slopes
LyD	Lyman loam, 15 to 25 percent slopes
LzC	Lyman-Rock outcrop complex, 8 to 15 percent slopes
MoA	Monarda silt loam
MrA	Monarda very stony silt loam
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PcC	Paxton very stony fine sandy loam, 8 to 15 percent slopes
PcD	Paxton very stony fine sandy loam, 15 to 25 percent slopes
PdB	Paxton-Charlton fine sandy loams, 3 to 8 percent slopes
PdC2	Paxton-Charlton fine sandy loams, 8 to 15 percent slopes, eroded
PdD2	Paxton-Charlton fine sandy loams, 15 to 25 percent slopes, eroded
PeB	Paxton-Charlton very stony fine sandy loams, 3 to 8 percent slopes
PeC	Paxton-Charlton very stony fine sandy loams, 8 to 15 percent slopes
PeD	Paxton-Charlton very stony fine sandy loams, 15 to 30 percent slopes
PfB	Peru fine sandy loam, 3 to 8 percent slopes
PkB	Peru very stony fine sandy loam, 3 to 8 percent slopes
PkC	Peru very stony fine sandy loam, 8 to 15 percent slopes
RcA	Ridgebury fine sandy loam
RdA	Ridgebury very stony fine sandy loam
RF	Rifle mucky peat *
SA	Saco soils *
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TO	Togus fibrous peat *
VA	Vassalboro fibrous peat *
WmB	Windsor loamy sand, 3 to 8 percent slopes
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WmD	Windsor loamy sand, 15 to 30 percent slopes
Wn	Winooski silt loam
WrB	Woodbridge fine sandy loam, 3 to 8 percent slopes
WrC	Woodbridge fine sandy loam, 8 to 15 percent slopes
WsB	Woodbridge very stony fine sandy loam, 3 to 8 percent slopes
WsC	Woodbridge very stony fine sandy loam, 8 to 15 percent slopes

* The composition of these units is more variable than that of the others in the survey area, but has been controlled well enough to be interpreted for the expected uses of the soils.

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline

AD HOC BOUNDARY (label)

- Small airport, airfield, park, oilfield, cemetery, or flood pool (Davis Airstrip; FLOOD POOL LINE)

STATE COORDINATE TICK

LAND DIVISION CORNERS (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEMS & DESIGNATIONS

- Interstate (78)
- Federal (410)
- State (52)
- County, farm or ranch (378)

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or small (water)

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) (Indian Mound)
- Located object (label) (Tower)
- Tank (label) (GAS)
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) (CANAL)
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial (water)
- Intermittent (int)

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS (CeA, FoB2)

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

SOIL SAMPLE SITE (normally not shown)

MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot
- Glacial till
- Made land (M.L.)
- Cut and fill (C.F.)
- Dune land (D.L.)

KENNEBEC COUNTY, MAINE — SHEET NUMBER 1

KENNEBEC COUNTY, MAINE NO. 1

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners if shown, are approximately positioned

635 000 FEET

685 000 FEET

675 000 FEET

655 000 FEET

SOMERSET COUNTY

KENNEBEC RIVER

CARRABASSETT STREAM

Pishon Ferry

Decker Corner

Ridge

Battle

(Joins sheet 2)

(Joins sheet 3)

1 Mile

5 000 Feet

Scale · 1:20000

N

KENNEBEC COUNTY, MAINE — SHEET NUMBER 2

2

N

1 Mile

5000 Feet

Scale 1:20000

680 000 FEET

685 000 FEET

675 000 FEET

660 000 FEET

SOMERSET COUNTY

WALDO COUNTY

Dixon Corner

Battle Ridge

Twelvemile Brook

GRAVEL PIT

(Joins sheet 1)

(Joins sheet 4)

This map is a mosaic of 1974 aerial photography by the U. S. Department of Agriculture. Soil Conservation Service and cooperating agencies
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KENNEBEC COUNTY, MAINE NO. 2

KENNEBEC COUNTY, MAINE — SHEET NUMBER 3

KENNEBEC COUNTY, MAINE NO. 3

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635 000 FEET

670 000 FEET

660 000 FEET

655 000 FEET

(Joins sheet 1)

(Joins sheet 4)

(Joins sheet 9)

3

N

1 Mile

5000 Feet

Scale · 1:20000

KENNEBEC COUNTY

SOMERSET COUNTY

KENNEBEC RIVER

Morrison Corner

GRAVEL PIT

KENNEBEC COUNTY, MAINE — SHEET NUMBER 4

4

N

1 Mile

5000 Feet

Scale 1:20000

(Joins sheet 2)

680 000 FEET

670 000 FEET

660 000 FEET

(Joins sheet 3)

(Joins sheet 5)

(Joins sheet 10)

WALDO COUNTY

CLINTON

Beaver Brook

Town House Hill

Tuttle Brook

G.P. Brook

SEBASTICOOK RIVER

MAINE CENTRAL

95

11
100

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KENNEBEC COUNTY, MAINE NO. 4

KENNEBEC COUNTY, MAINE — SHEET NUMBER 5

KENNEBEC COUNTY, MAINE NO. 5

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Coordinate grid ticks and land division corners, if shown, are approximately positioned

KENNEBEC COUNTY, MAINE — SHEET NUMBER 6

6

N

1 Mile
5000 Feet
Scale 1:20000

558 000 FEET
641 000 FEET
638 000 FEET
555 000 FEET
(Joins sheet 13)
(Joins lower left)
3000-FOOT GRID TICKS

580 000 FEET
650 000 FEET
640 000 FEET
560 000 FEET
(Joins inset)
(Joins sheet 14)
(Joins sheet 7)

SOMERSET COUNTY
FRANKLIN COUNTY
NORTH POND
LITTLE POND
THE NARROWS
Robbins Mill Stream
Whittier Brook
Tyrol Brook
Martin Hill
Morrill Hill
Roberts Hill
Mount Philip
Rome
ROME

PkB PkC BkC BkD RdA LyC LyD HkC HkB HkD DeB WmC Bu82 SkB SkC2 HfC PfB RcA VA RF ScA

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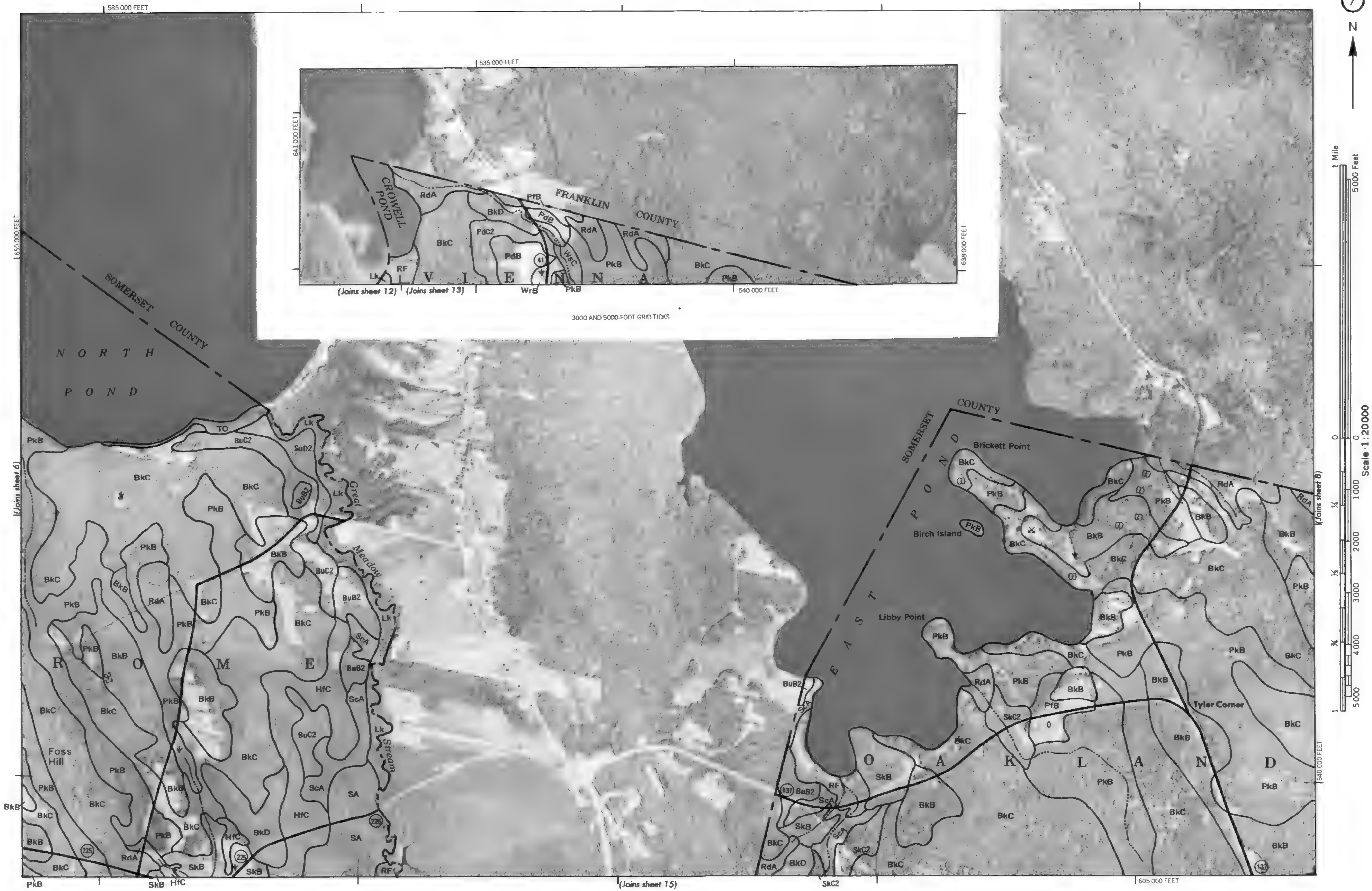
Coordinate grid ticks and land division corners, if shown, are approximately positioned

KENNEBEC COUNTY, MAINE NO. 6



KENNEBEC COUNTY, MAINE NO. 7

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KENNEBEC COUNTY, MAINE — SHEET NUMBER 8

N

Scale 1:20000

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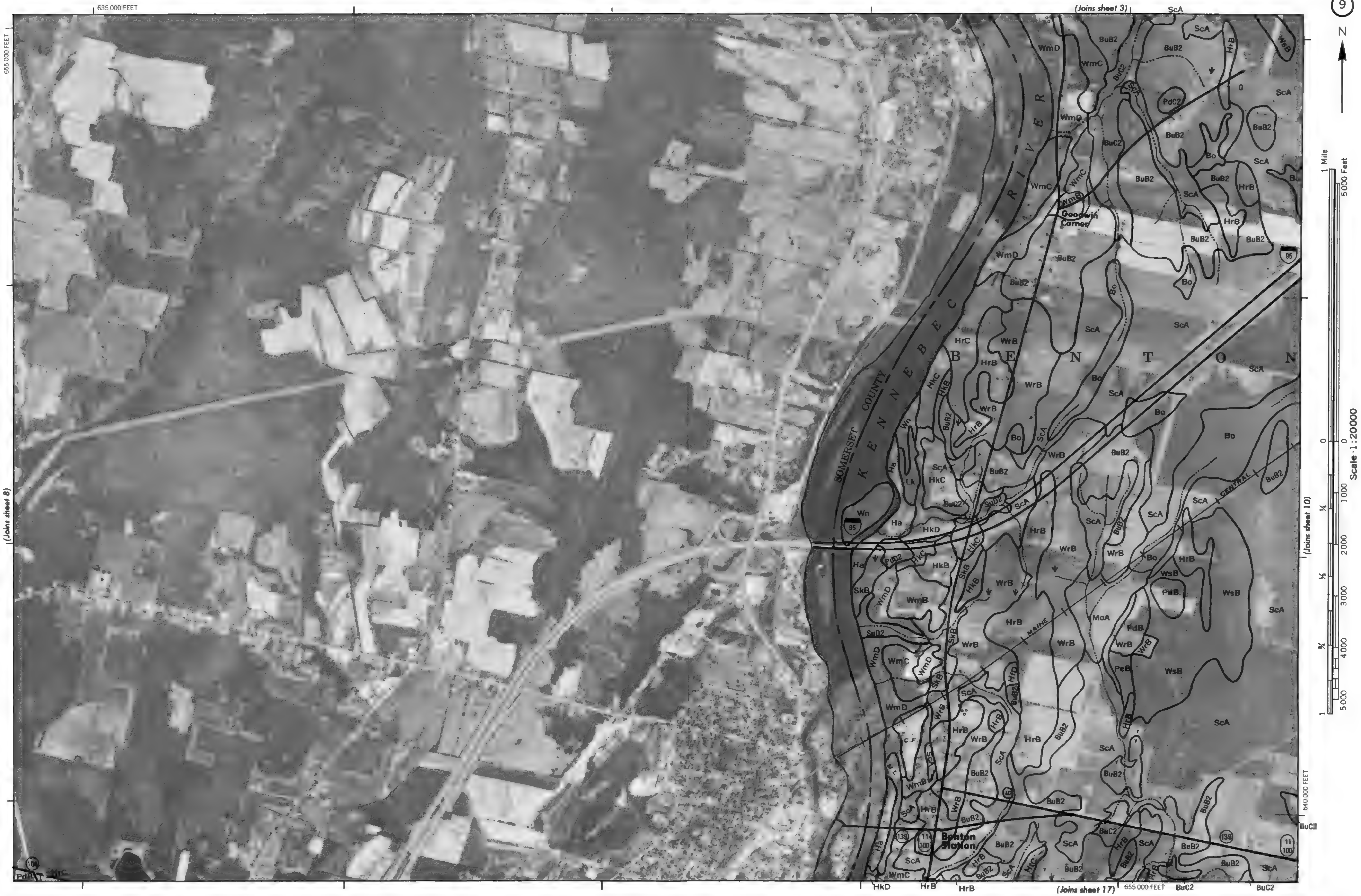

KENNEBEC COUNTY, MAINE NO. 9

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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 10

KENNEBEC COUNTY, MAINE — SHEET NUMBER 11

KENNEBEC COUNTY, MAINE NO. 11

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Coordinate grid ticks and land division corners, if shown, are approximately positioned

685 000 FEET

655 000 FEET

(Joins sheet 5)

(Joins sheet 10)

(Joins sheet 19)

640 000 FEET

705 000 FEET

CLINTON

BENTON

UNITY

WALDO COUNTY

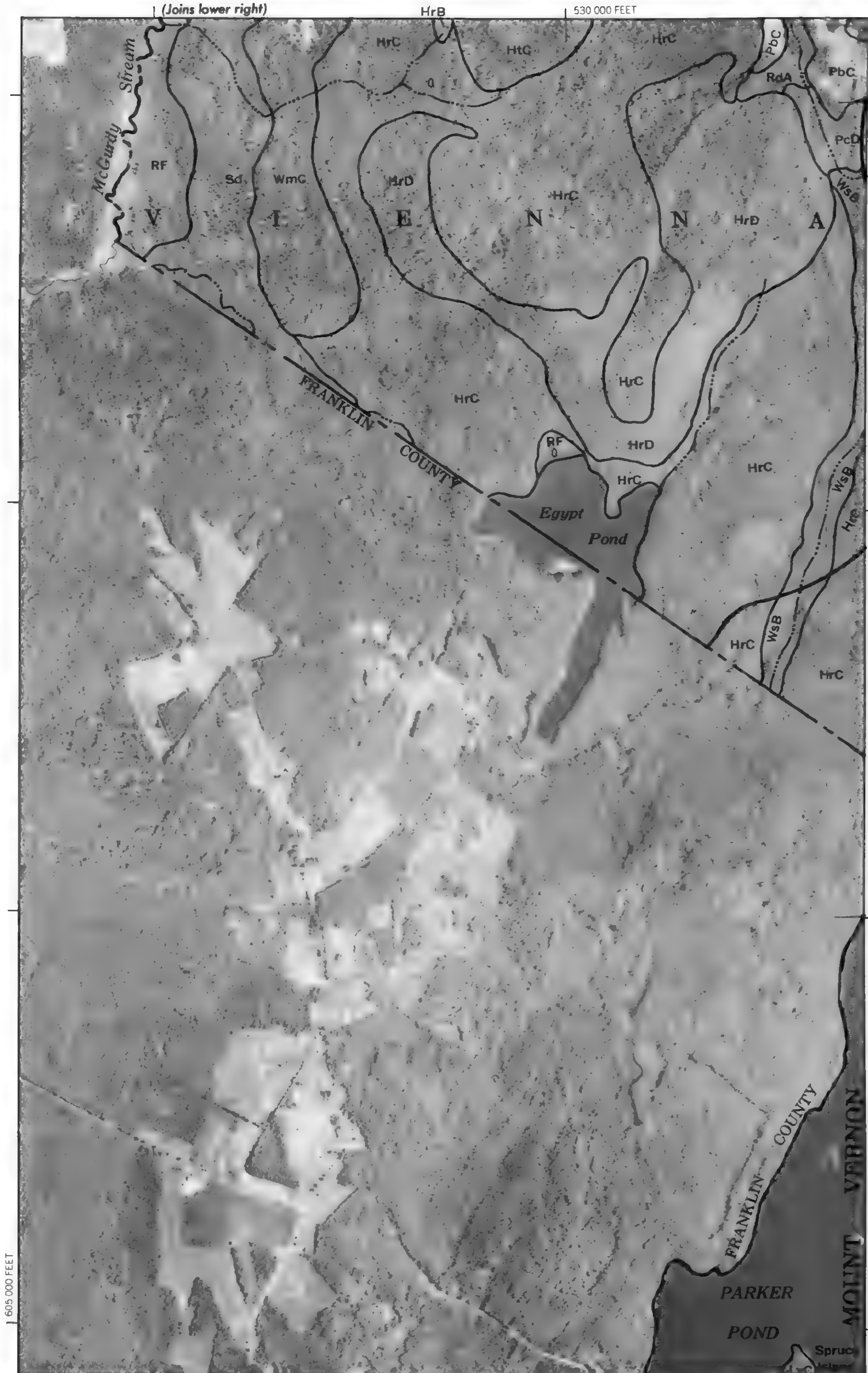
11

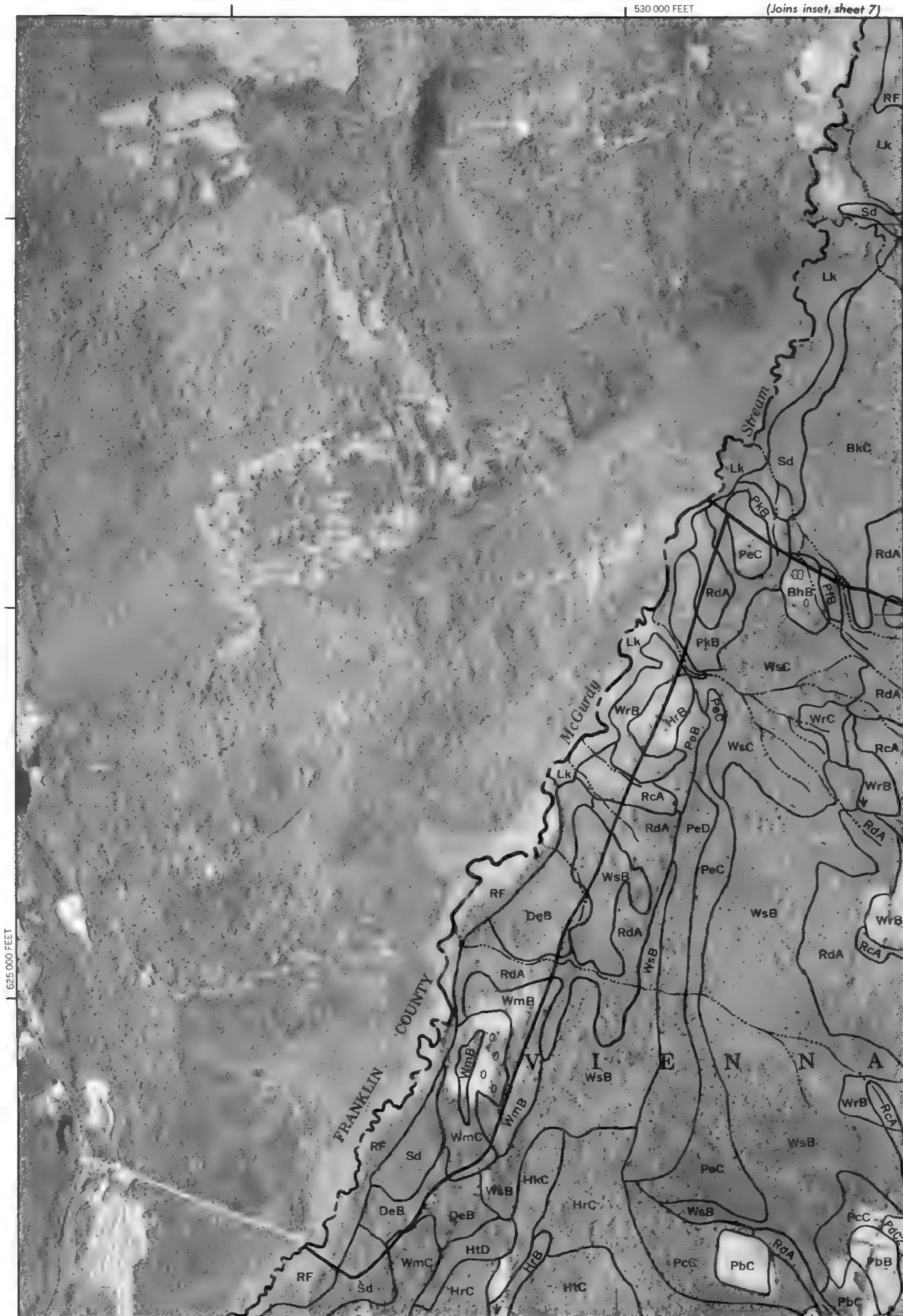
N

1 Mile

5000 Feet

Scale 1:20000





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KENNEBEC COUNTY, MAINE NO. 13

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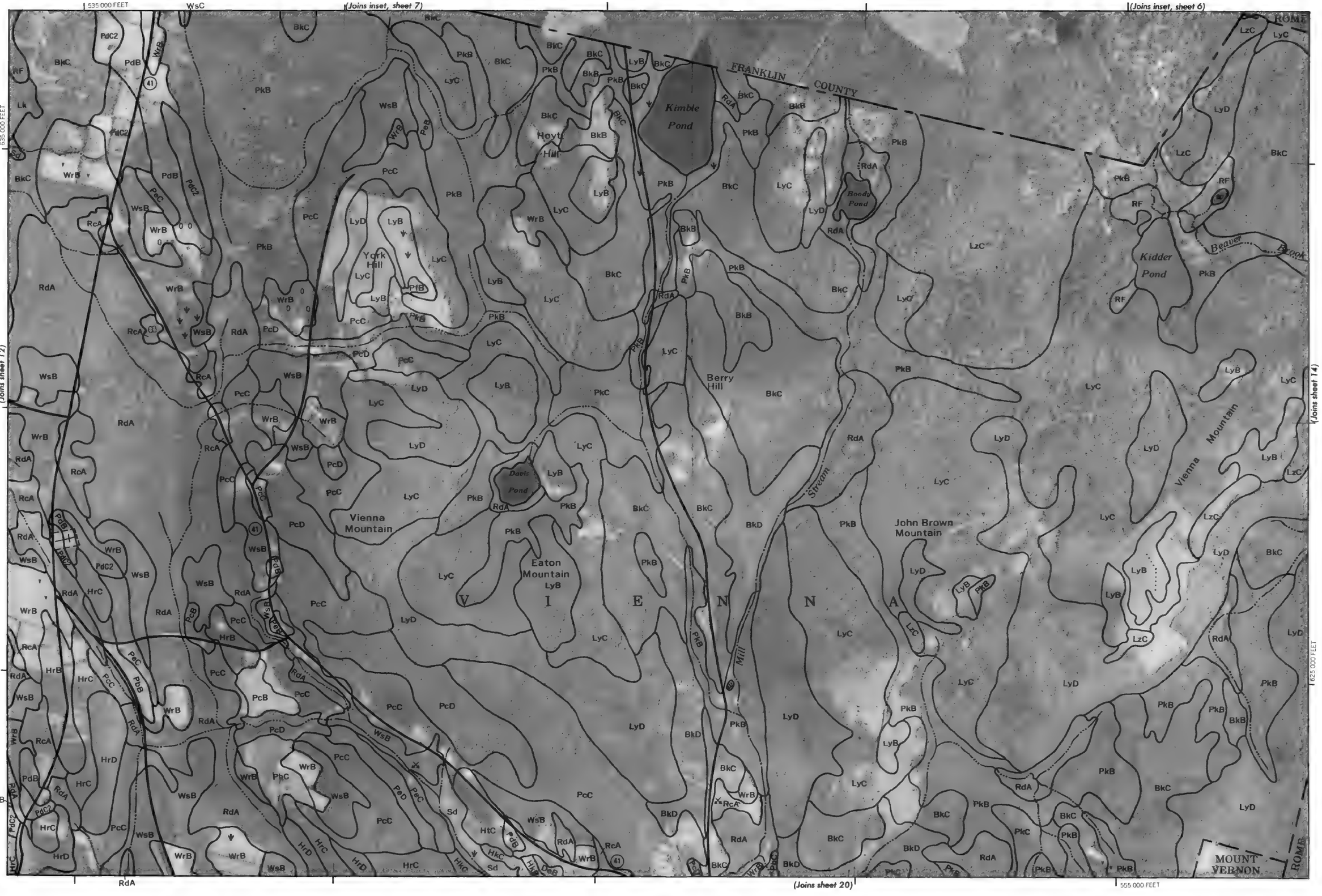
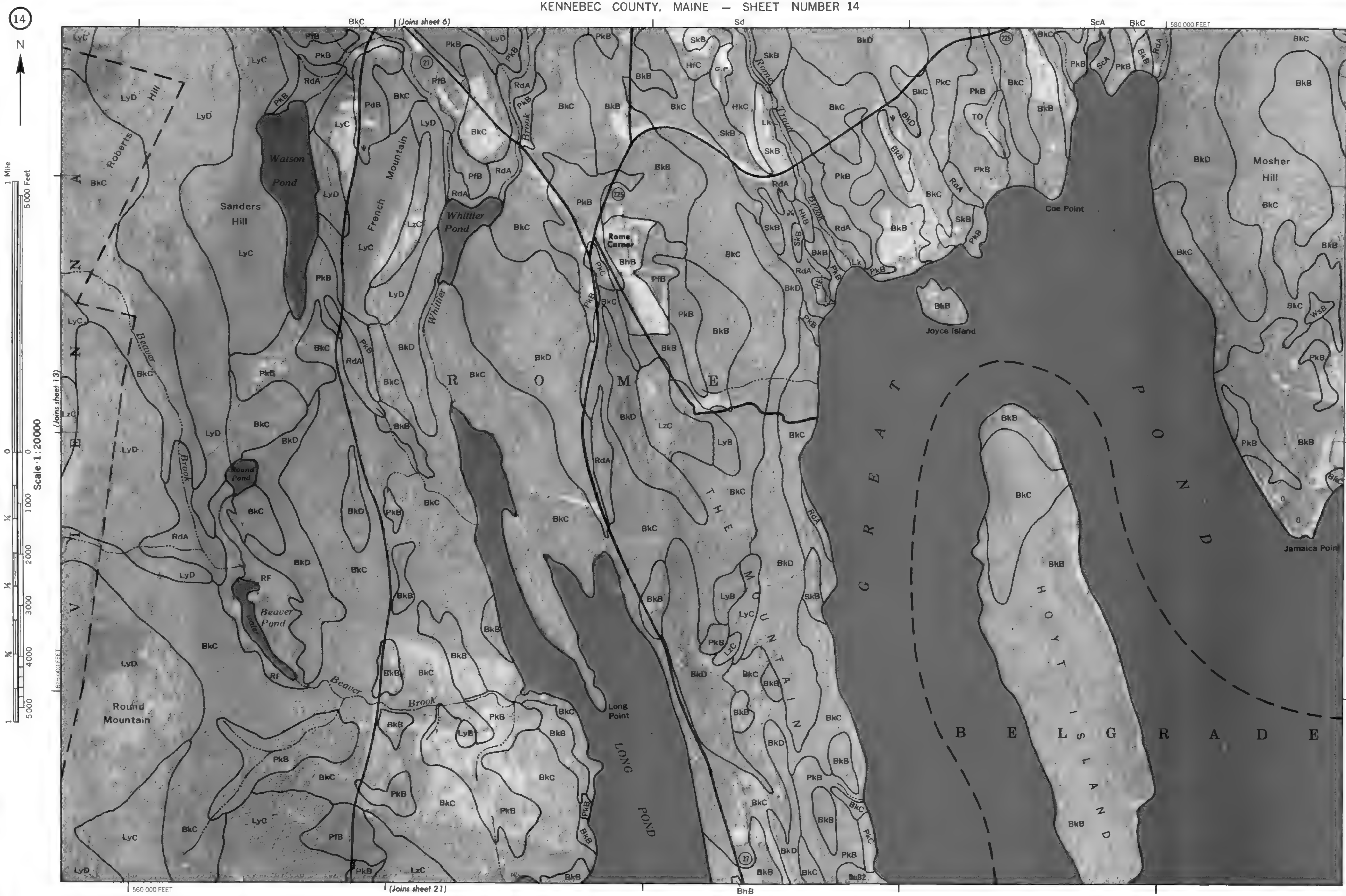




This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

585 000 FEET

635 000 FEET

625 000 FEET

605 000 FEET

(Joins sheet 14)

(Joins sheet 7)

(Joins sheet 16)

(Joins sheet 22)

SOMERSET COUNTY

KENNEBEC COUNTY, MAINE NO. 15

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 Mile
5000 Feet
Scale 1:20000

16

N

1 Mile 5000 Feet

0 0

Scale 1:20000

1000 2000 3000 4000 5000

¼ ½ ¾ 1

625 000 FEET

635 000 FEET

630 000 FEET

610 000 FEET

(Joins sheet 8)

(Joins sheet 15)

(Joins sheet 17)

(Joins sheet 23)

OAKLAND

WATERVILLE

WATERVILLE LAFLUER AIRPORT

MAYFLOWER

CUT AND FILL LAND

Martin Stream

Hussey Hill

Reservoir

MAINE CENTRAL

MESSALONSKEE STREAM

MESSALONSKEE LAKE

BkB BkC BuB2 BuC2 HrB HrC HrD MoA PdB PdC2 PeB PeC PfB PkB RcA RdA ScA SkB SkC2 SuC2 SuD2 WrB WsB WsBi

This map is compiled on 1974 aerial photography by the U S Department of Agriculture. Soil Conservation Service and cooperating agencies
Coordinating grid ticks and land division corners, if shown, are approximately positioned

KENNEBEC COUNTY, MAINE NO. 16

KENNEBEC COUNTY, MAINE — SHEET NUMBER 17

KENNEBEC COUNTY, MAINE NO. 17

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land divisions on corners, if shown, are approximately positioned

635 000 FEET

655 000 FEET

625 000 FEET

(Joins sheet 9)

(Joins sheet 16)

(Joins sheet 18)

(Joins sheet 24)

SOMERSET COUNTY

KENNEBEC RIVER

WATERVILLE

WINSLOW

Holland

Pattee Pond

CUT AND FILL LAND

MADE LAND

CENTRAL MAINE STREAM

SEBASTICOOK

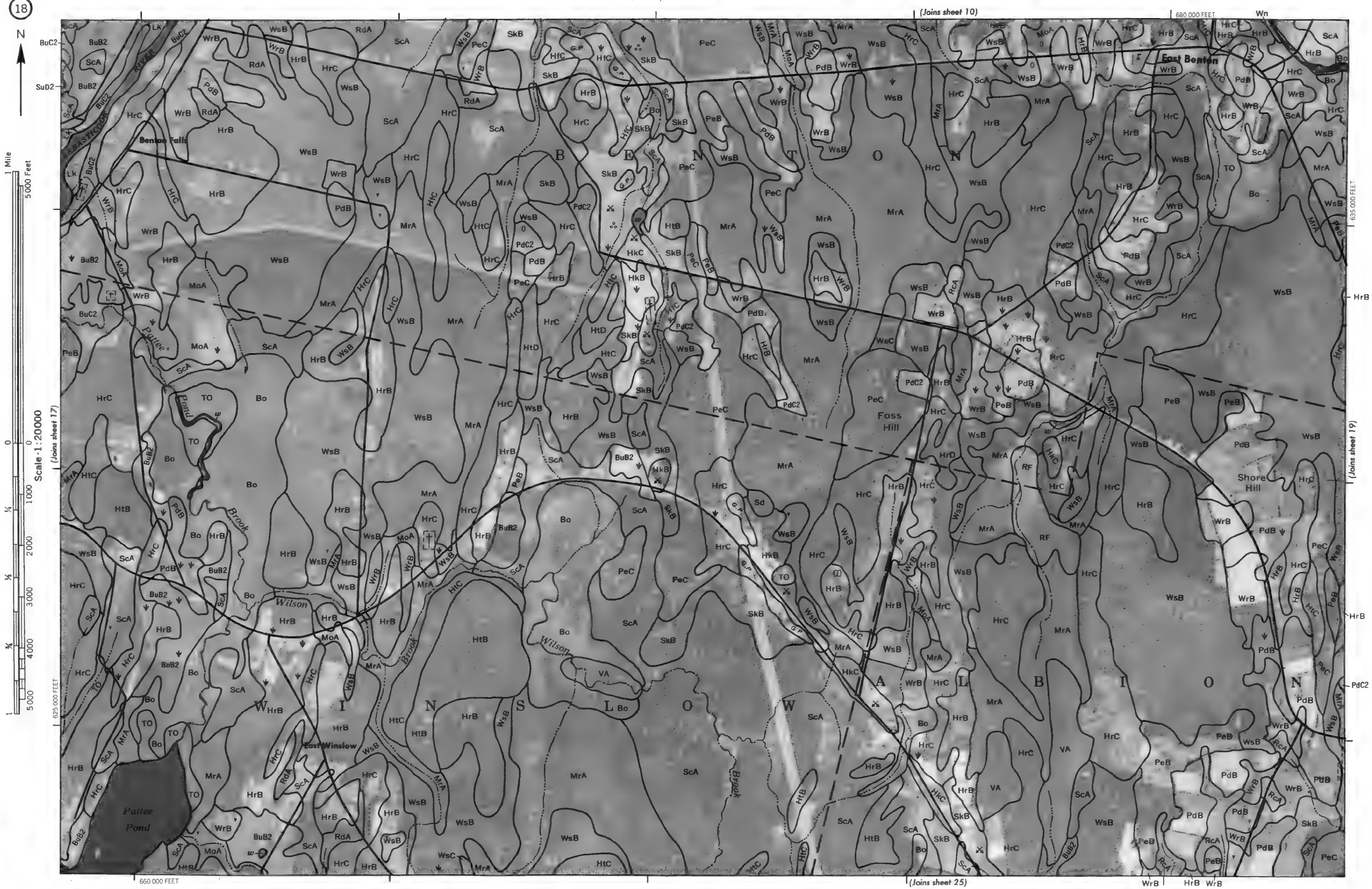
17

N

1 Mile

5000 Feet

Scale 1:20000



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners if shown are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 18

KENNEBEC COUNTY, MAINE — SHEET NUMBER 19

KENNEBEC COUNTY, MAINE NO. 19

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

685 000 FEET

635 000 FEET

625 000 FEET

705 000 FEET

(Joins sheet 11)

(Joins sheet 18)

(Joins sheet 26)

WALDO COUNTY

BENTON

ALBION

UNITY

Fifteenmile Stream

Fowler Brook

Fowler Bog

Mill Stream

Fowler Brook

C.F.

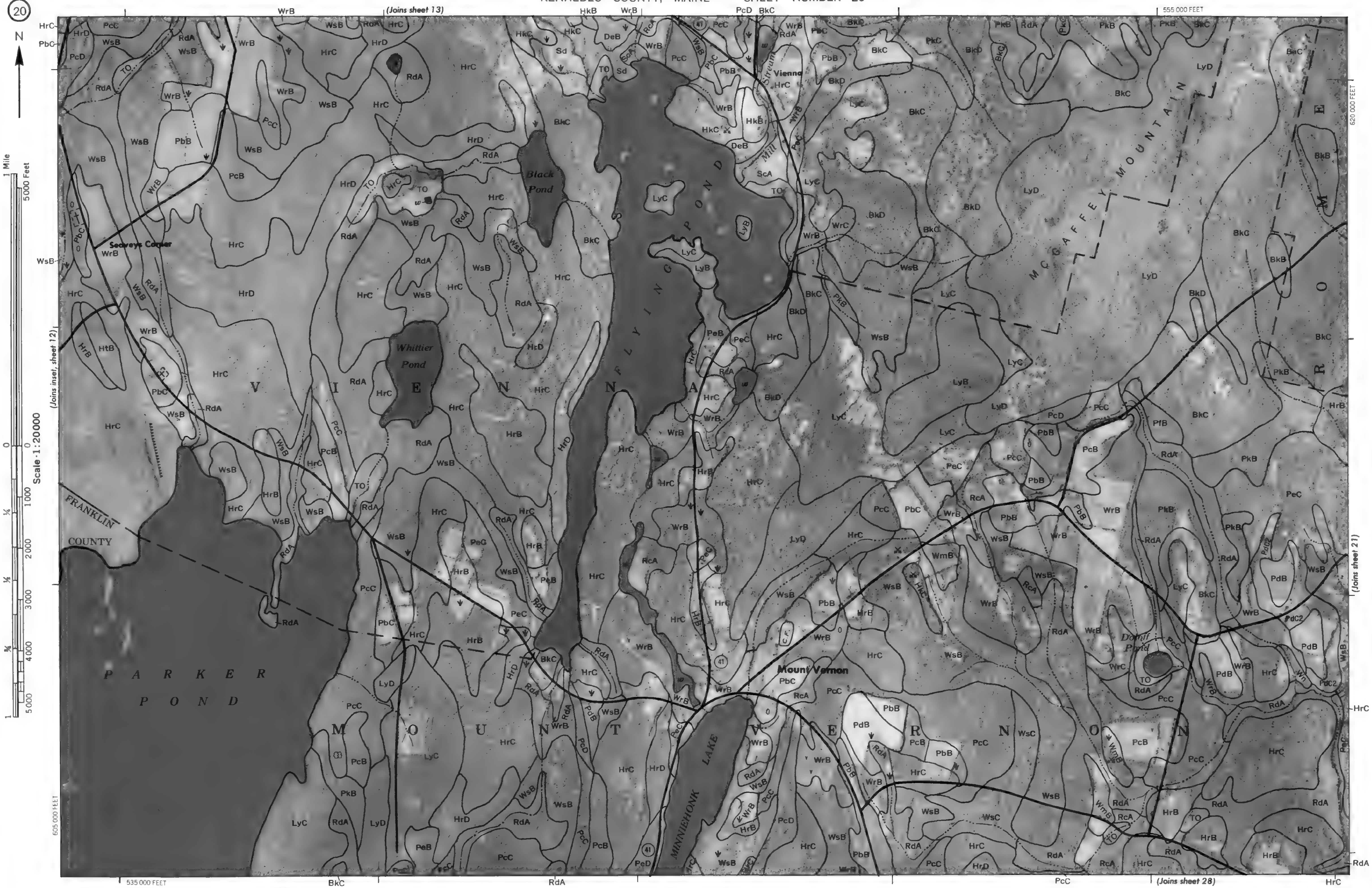
19

N

1 Mile

5000 Feet

Scale 1:20000



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners if shown, are approximately positioned

KENNEBEC COUNTY, MAINE — SHEET NUMBER 21

KENNEBEC COUNTY, MAINE NO. 21

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

560 000 FEET

620 000 FEET

(Joins sheet 14)

(Joins sheet 20)

(Joins sheet 22)

(Joins sheet 29)

605 000 FEET

580 000 FEET

21

N

1 Mile

5000 Feet

Scale 1:20000

R O M E

MOUNT VERNON

BELGRADE LAKES

G R E A T P O N D

Yallaly Hill

Dunn Point

Castle Island

Green Island

Belgrade Lakes

Camp Abena Point

Long Point

HOYT ISLAND

Stony Brook

22
N
Scale 1:20000
(Joins sheet 15)
(Joins sheet 21)
(Joins sheet 23)
(Joins sheet 30)
605 000 FEET
620 000 FEET
585 000 FEET
GREAT POND
HATCH COVE
ELLIS POND
MESSALONSKEE LAKE
OAKLAND
BELGRADE
SIDNEY
Oak Island
Pine Island
Blake Island
Hemlock Point
Foster Point
North Belgrade
North Belgrade Station
MAINE CENTRAL
KENNEBEC COUNTY, MAINE NO. 22

KENNEBEC COUNTY, MAINE — SHEET NUMBER 23

KENNEBEC COUNTY, MAINE NO. 23

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies
Coord nate grid ticks and land division corners, if shown, are approximately positioned

610 000 FEET

620 000 FEET

630 000 FEET

(Joins sheet 16)

(Joins sheet 22)

(Joins sheet 24)

(Joins sheet 31)

WATERVILLE LAFLEUR AIRPORT

KENNEBEC RIVER

SIDNEY

WINSLOW

VASSALBORO

LAKE WESSALONSKEE

MAINE CENTRAL R.R.

CUT AND FILL LAND

MADE LAND

GRAVEL PIT

G.P.

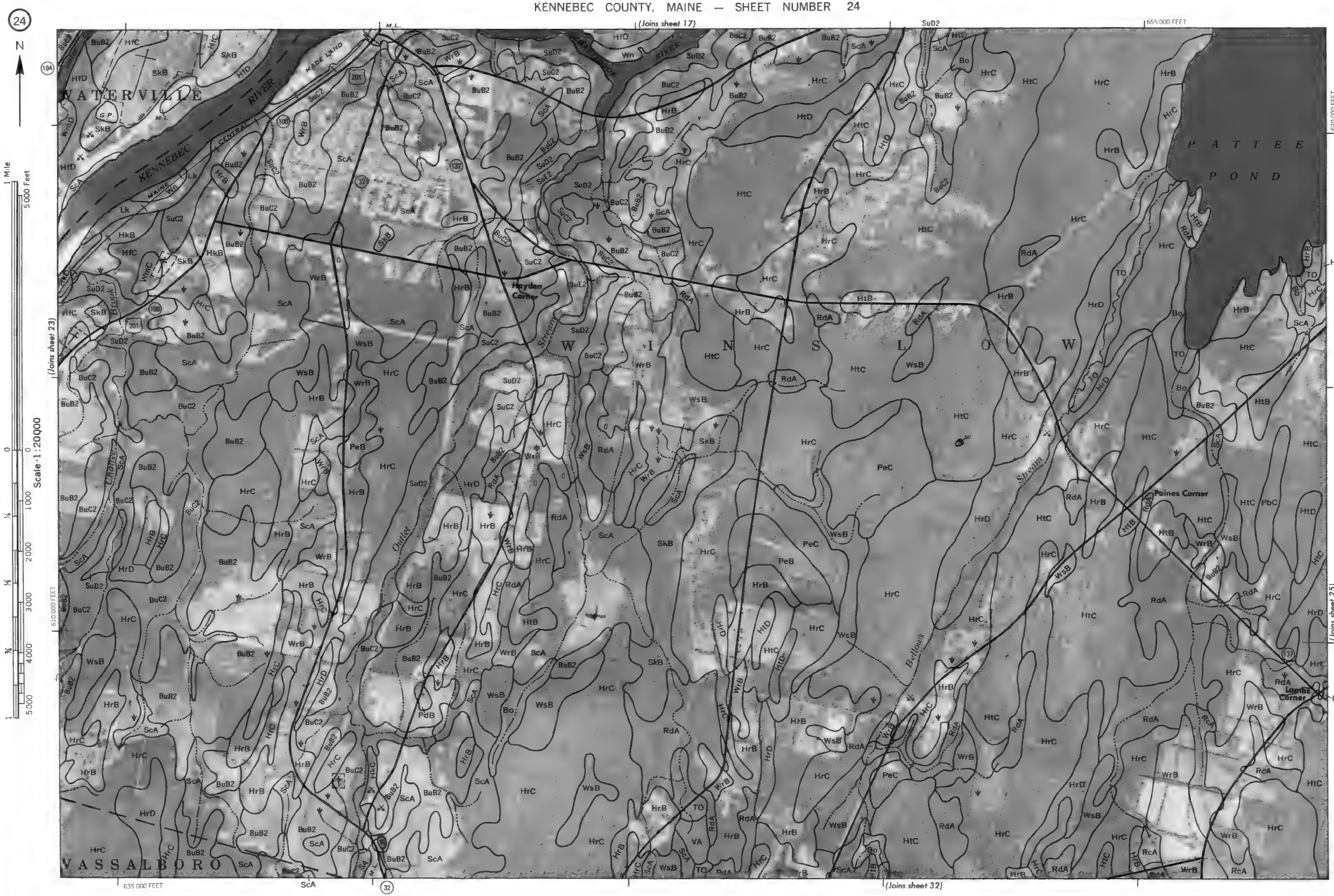
C.F.

N

Scale 1:20000

1 Mile

5000 Feet



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 24

KENNEBEC COUNTY, MAINE — SHEET NUMBER 25

KENNEBEC COUNTY, MAINE NO. 25

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

660 000 FEET

620 000 FEET

610 000 FEET

680 000 FEET

(Joins sheet 18)

(Joins sheet 24)

(Joins sheet 26)

(Joins sheet 33)

25

N

1 Mile

5000 Feet

Scale 1:20000

Pattee Pond

Wilson Brook

GRAVEL PIT

GRAVEL PIT

South Albion

WINSLOW

CHINA

BAKER

HILL

LOVEJOY POND

KENNEBEC COUNTY, MAINE — SHEET NUMBER 26

26

N

1 Mile

5000 Feet

Scale 1:20000

(Joins sheet 25)

(Joins sheet 19)

(Joins sheet 34)

705 000 FEET

685 000 FEET

620 000 FEET

610 000 FEET

Albion

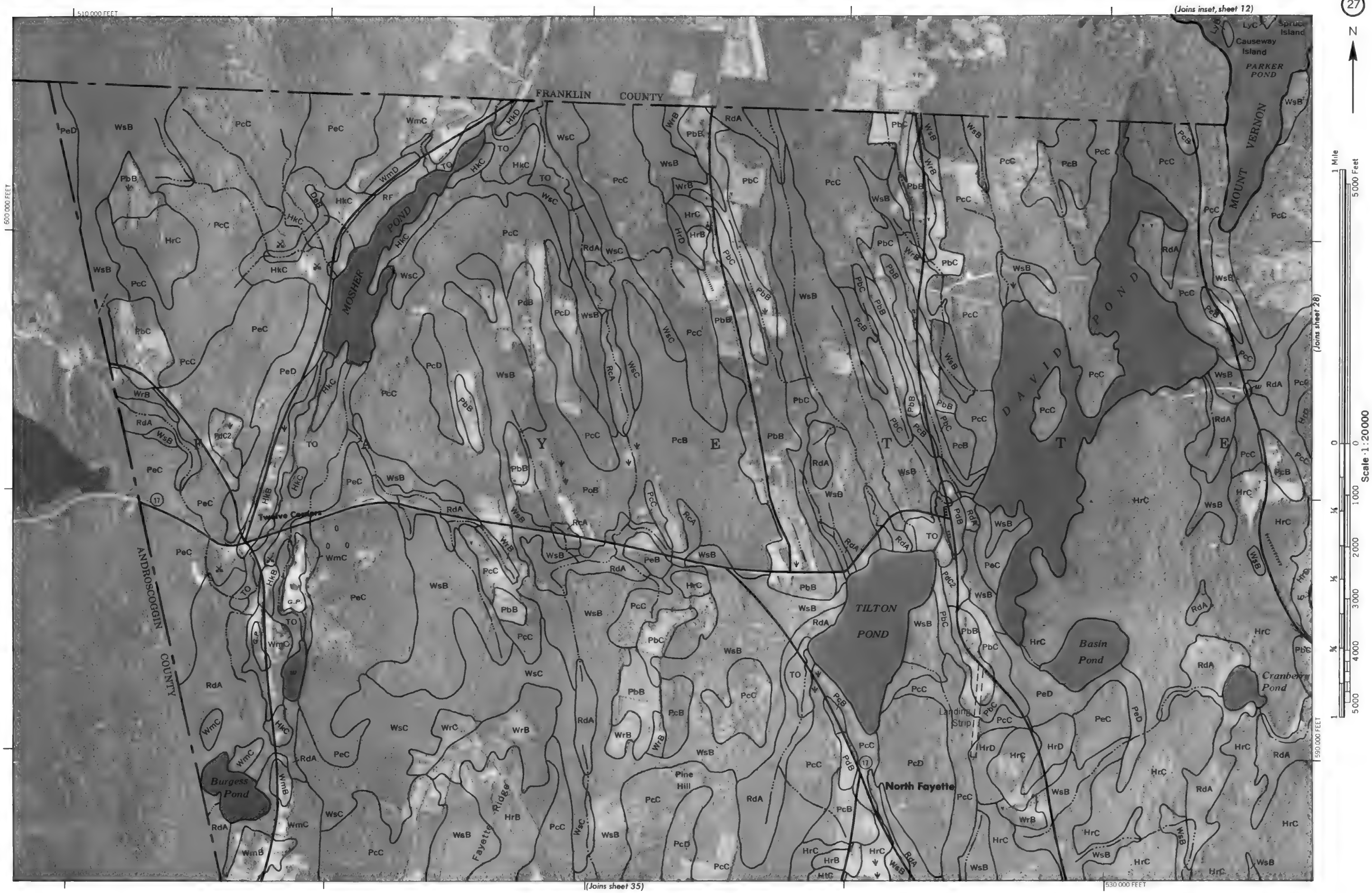
Fifteenmile Stream

Pratt Stream

WALDO COUNTY

KENNEBEC COUNTY, MAINE NO. 26

This map is compiled on 1:20 aer a photography by the U. S. Department of Agriculture Soi Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners if shown are approximately positioned

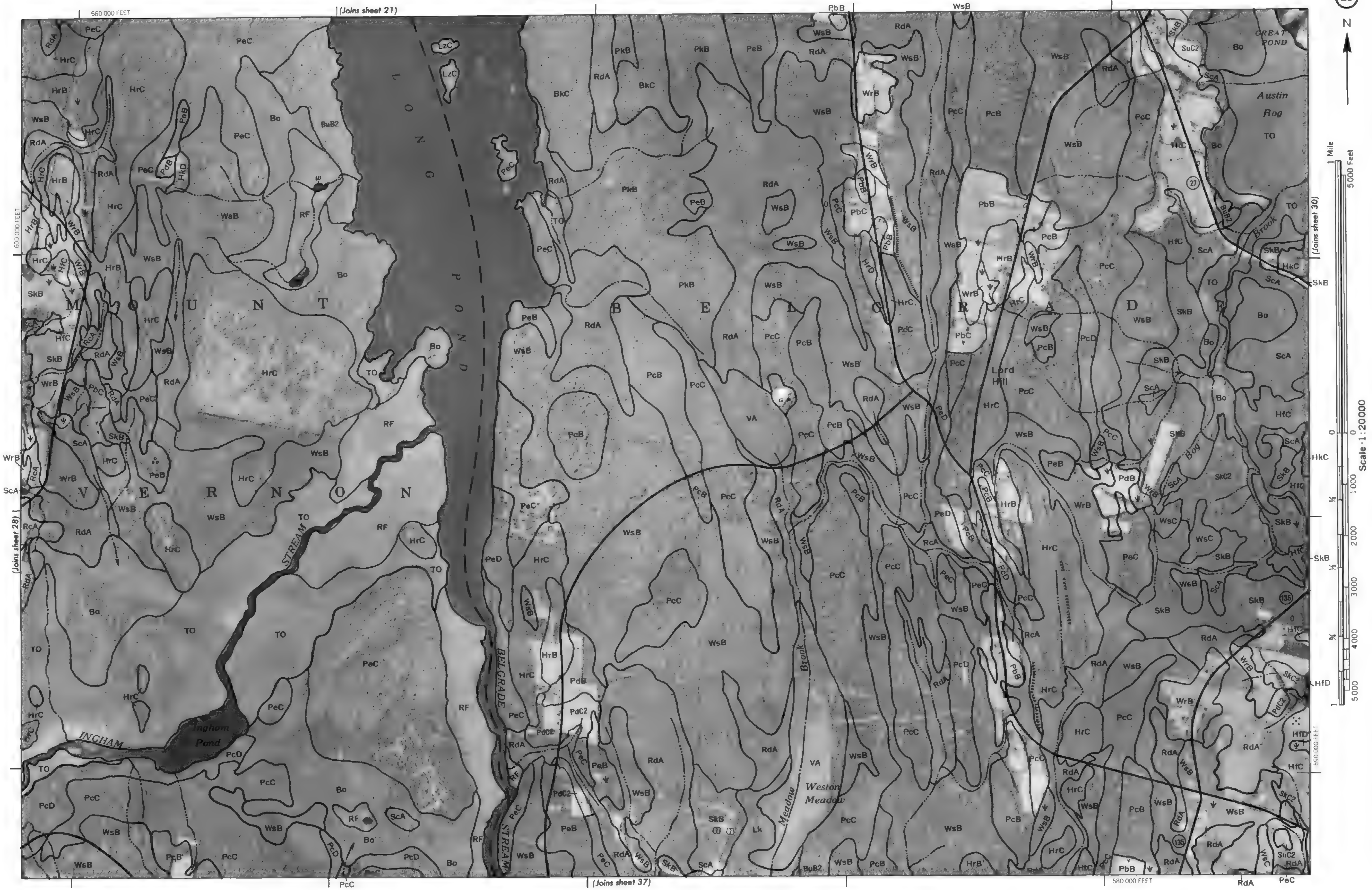


KENNEBEC COUNTY, MAINE NO. 27

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE — SHEET NUMBER 28

29



KENNEBEC COUNTY, MAINE, NO. 29

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE — SHEET NUMBER 30

30

N

1 Mile

5000 Feet

Scale 1:20000

GREAT POND

GREAT POND

Bog Brook

Hamilton Pond

Stuart Pond

BELGRADE

LAKE MESSALONSKEE

CENTRAL MAINE

Greely Island

Lake Shore

Bangs Beach

Fields Brook

(Joins sheet 29)

(Joins sheet 22)

(Joins sheet 31)

(Joins sheet 38)

TO

605 000 FEET

600 000 FEET

590 000 FEET

585 000 FEET

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners shown are approximately positioned

KENNEBEC COUNTY, MAINE NO. 30

KENNEBEC COUNTY, MAINE NO. 31

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE — SHEET NUMBER 32

32

N

1 Mile

5,000 Feet

Scale 1:20000

(Joins sheet 31)

(Joins sheet 24)

655 000 FEET

605 000 FEET

590 000 FEET

635 000 FEET

(Joins sheet 33)

(Joins sheet 40)

Cook Hill

North Vassalboro

Priest Hill

Bellous Stream

Emerson Stream

Outlet

Stream

GRAVEL PIT

Taber Hill

East Vassalboro

VASSALBORO

CHINA LAKE

This map is compiled on 1974 aerial photography by the U S Department of Agriculture Soil Conservation Service and interpreting symbols
Coordinate grid ticks and land division corners, if shown, are approximately positioned

KENNEBEC COUNTY, MAINE NO. 32

KENNEBEC COUNTY, MAINE — SHEET NUMBER 33

33

N

660 000 FEET

605 000 FEET

(Joins sheet 25)

202 9 137

WINSLOW

Mud Pond

Dulton Pond

China

Wentworth Point

CHINA LAKE

Hunter Brook

Yorktown Brook

ALBION

(Joins sheet 32)

(Joins sheet 34)

(Joins sheet 41)

680 000 FEET

590 000 FEET

1 Mile

5000 Feet

Scale 1:20000

KENNEBEC COUNTY, MAINE NO. 33

This map is compiled on 1971 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies
Coordinable grid ticks and land division corners, if shown, are approximately positioned

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

KENNEBEC COUNTY, MAINE NO. 34

KENNEBEC COUNTY, MAINE — SHEET NUMBER 35

35

N

KENNEBEC COUNTY, MAINE NO. 35

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

510 000 FEET

595 000 FEET

575 000 FEET

530 000 FEET

(Joins sheet 27)

(Joins sheet 36)

(Joins sheet 42)

1 Mile

5000 Feet

Scale 1:20000

0 ¼ ½ ¾ 1

1 000 2 000 3 000 4 000 5 000

ANDROSCOGGIN COUNTY

FAYETTE

ECHO LAKE

Ridge

Schoolhouse Pond

Baldwin Hill

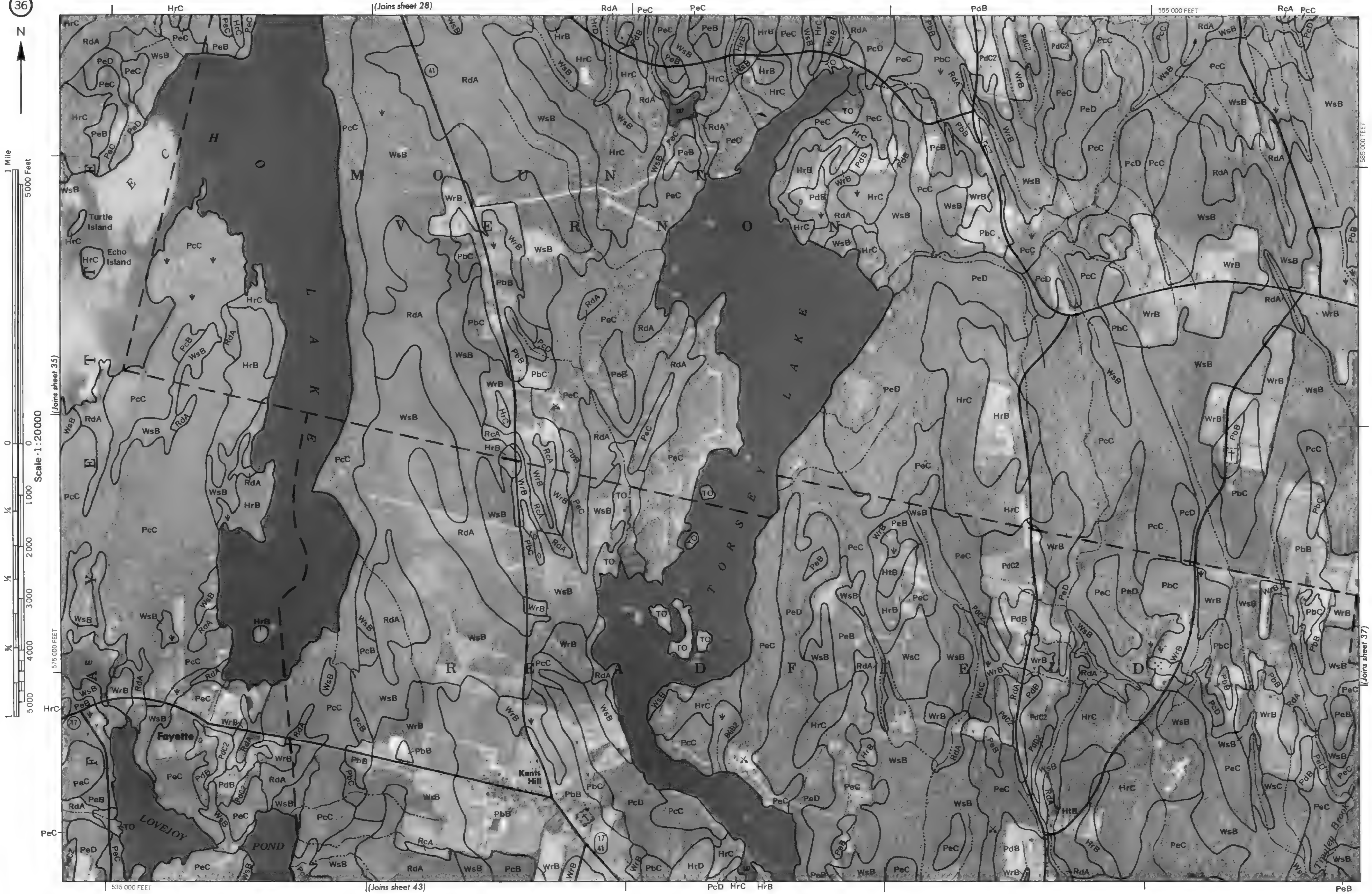
Meadow Brook

Fayette Corner

Hales Pond

Sanderson Corners

Oak Hill

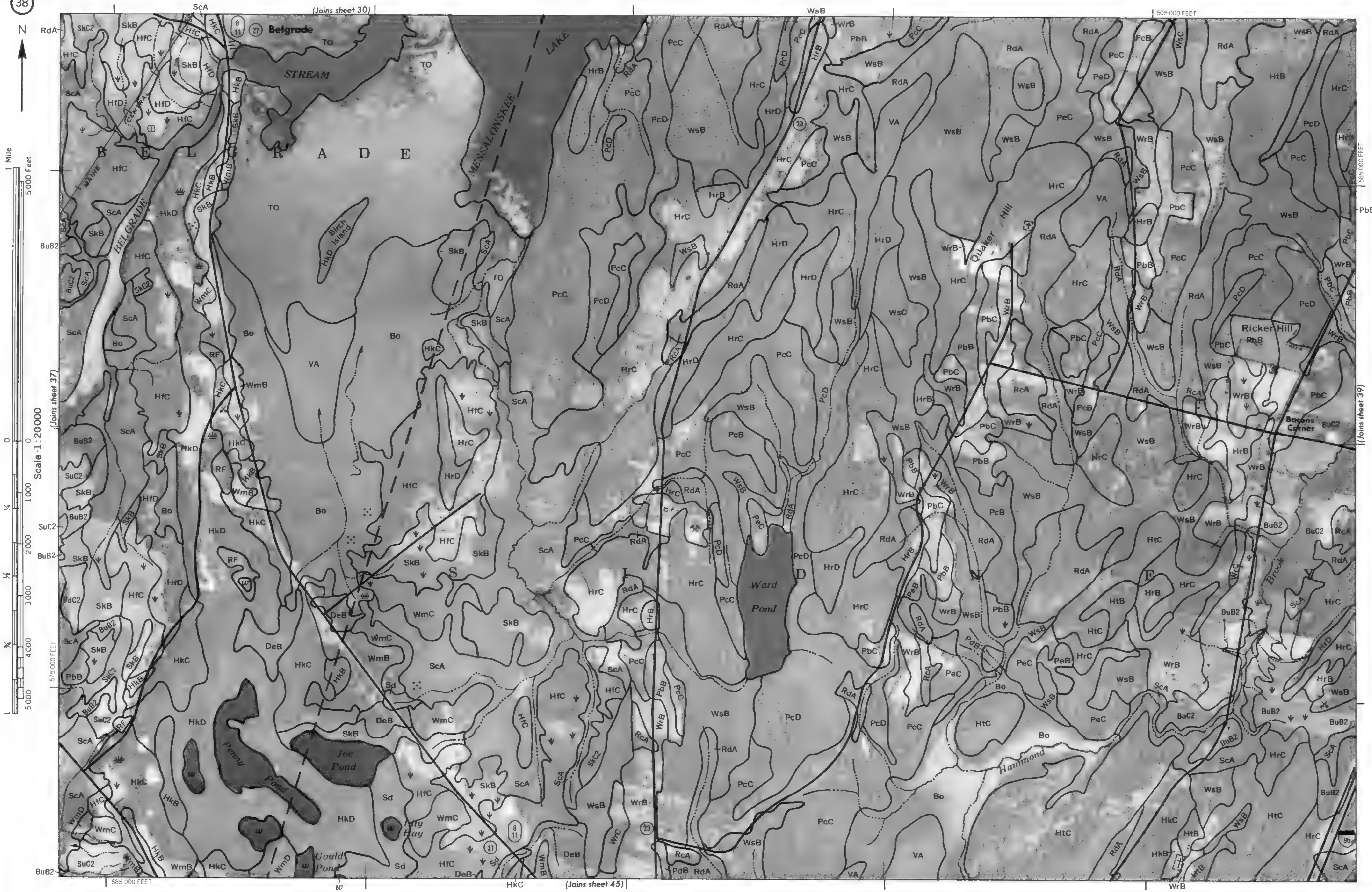


This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

37

KENNEBEC COUNTY, MAINE NO. 37

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE — SHEET NUMBER 39

39

N

610 000 FEET

630 000 FEET

585 000 FEET

575 000 FEET

(Joins sheet 31)

(Joins sheet 40)

(Joins sheet 38)

(Joins sheet 46)

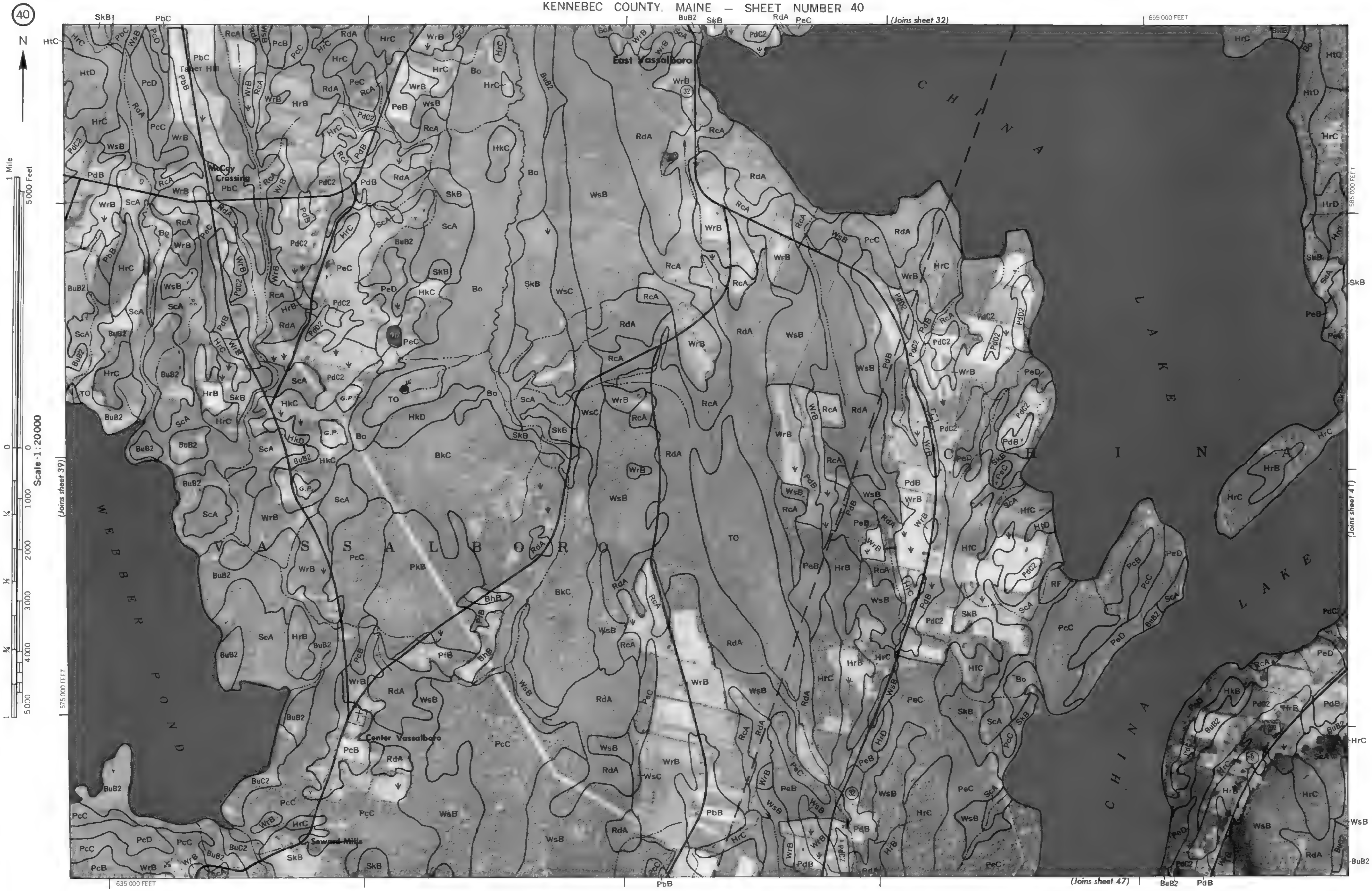
Scale 1:20000

1 Mile

5000 Feet

KENNEBEC COUNTY, MAINE NO. 39

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners, if shown, are approximately positioned



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land divisions on corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 40

KENNEBEC COUNTY, MAINE — SHEET NUMBER 41

41

N

660 000 FEET

585 000 FEET

575 000 FEET

680 000 FEET

(Joins sheet 33)

(Joins sheet 40)

(Joins sheet 48)

(Joins inset, sheet 34)

CHINA LAKE

Indian Island

Kildeer Point

Evans Pond

Dirigo Corner

Hunter Brook

WALDO COUNTY

POND BRANCH

Sheepscot River

Bagatch

West

1 Mile

5000 Feet

Scale 1:20000

KENNEBEC COUNTY, MAINE NO. 41

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and mapping agencies
Coordinate grid ticks and land division corners, if shown, are approximately ± 200 feet

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 42

KENNEBEC COUNTY, MAINE — SHEET NUMBER 43

43

N

535 000 FEET

570 000 FEET

(Joins sheet 36)

(Joins sheet 42)

(Joins sheet 44)

(Joins sheet 50)

555 000 FEET

FAYETTE

WAYNE

READFIELD

WINTHROP

Kents Hill

North Wayne

Readfield

JOY POND

LOVEJOY POND

HORSEY LAKE

MARANACOOK LAKE

Brook

Tinglen

Jones

Gardner

CENTRAL MAINE

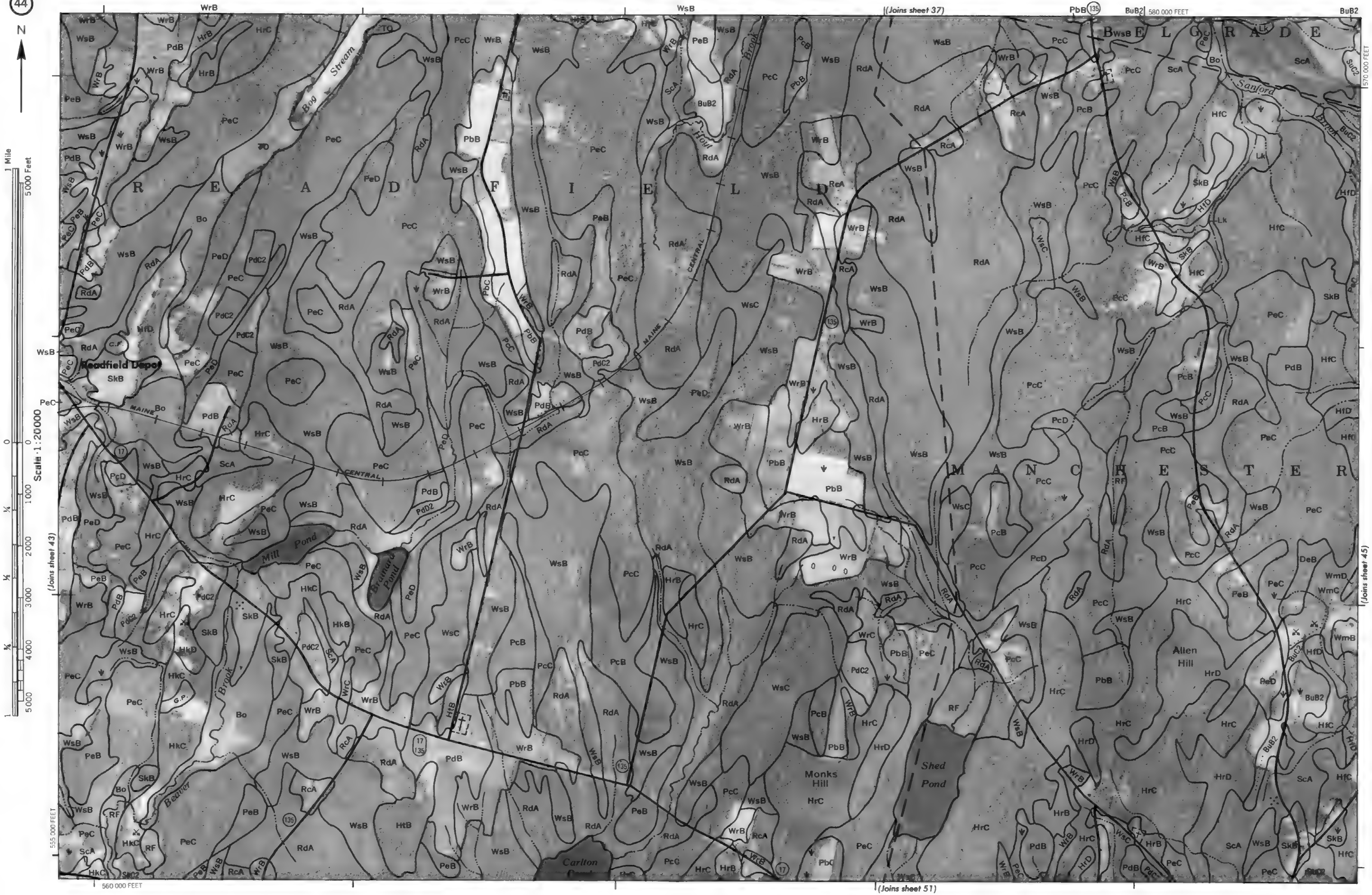
water

1 Mile

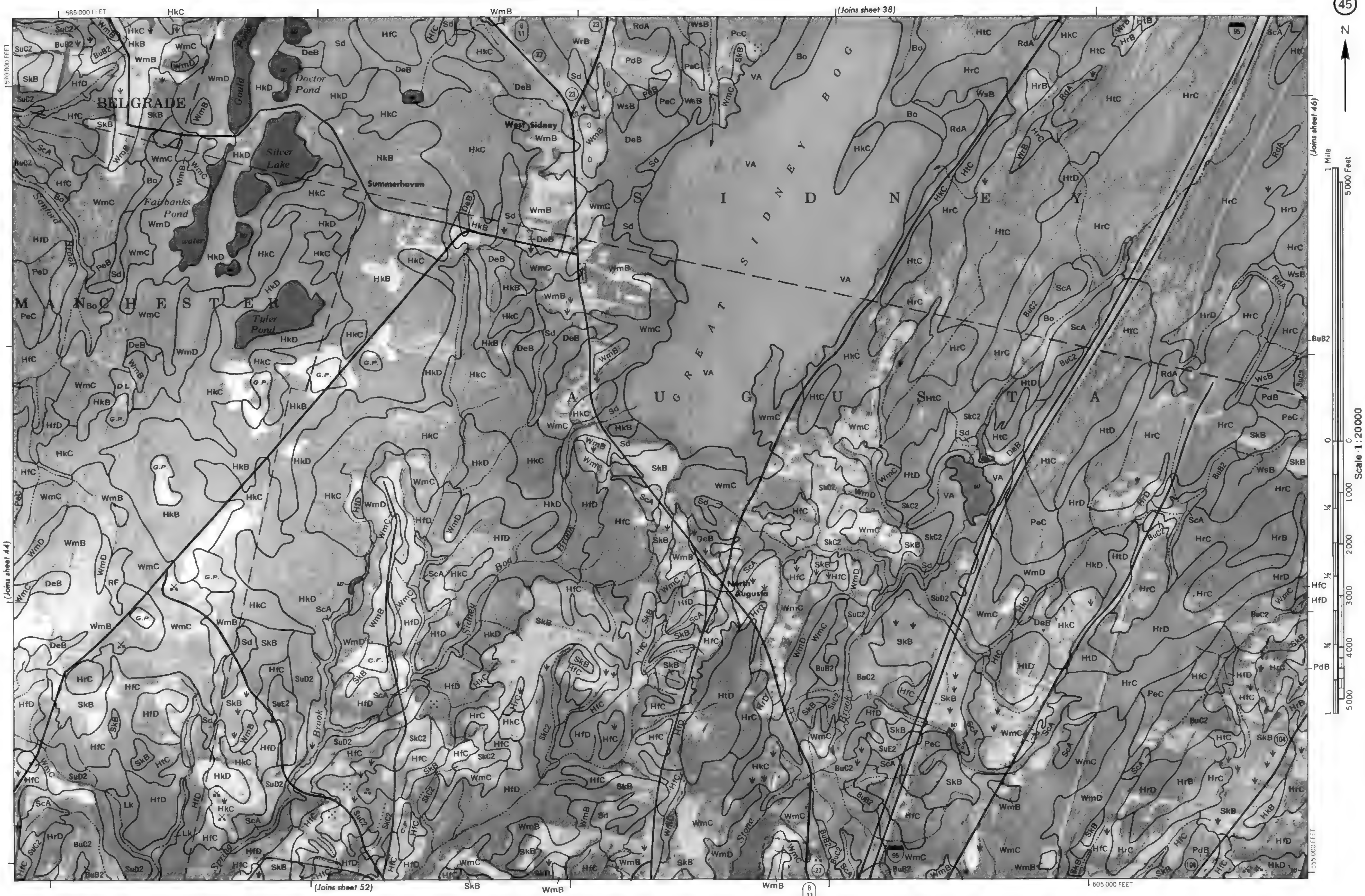
5000 Feet

Scale 1:20000

KENNEBEC COUNTY, MAINE NO. 43



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



KENNEBEC COUNTY, MAINE NO. 45

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE — SHEET NUMBER 46

46

N

1 Mile

5000 Feet

Scale 1:20000

0 0 ¼ 1000 ½ 2000 ¾ 3000 1 4000 5000

630 000 FEET

570 000 FEET

610 000 FEET

555 000 FEET

(Joins sheet 39)

(Joins sheet 45)

(Joins sheet 47)

(Joins sheet 53)

SIDNEY

VASSALBORO

WEBBER POND

SPECTACLE POND

Sevenmile Brook

Riverside

Anderson Pond

Dam Pond

KENNEBEC RIVER

MAINE CENTRAL GRAVEL PIT

This map is compiled on 1974 aerial photography by the U S Department of Agriculture Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners shown are approximately positioned

KENNEBEC COUNTY, MAINE NO. 46

KENNEBEC COUNTY, MAINE — SHEET NUMBER 47

KENNEBEC COUNTY, MAINE NO. 47

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners, if shown, are approximate positions

635 000 FEET

570 000 FEET

560 000 FEET

655 000 FEET

(Joins sheet 40)

(Joins sheet 46)

(Joins sheet 48)

(Joins sheet 54)

47

N

1 Mile

5000 Feet

Scale 1:20000

South Chesterville

South Vassalboro

CHINA LAKE

VASSALBORO

CHINA

THREE MILE POND

AUGUSTA WINDSOR

Hewitt Brook

KENNEBEC COUNTY, MAINE — SHEET NUMBER 48

48

N

1 Mile

5000 Feet

Scale 1:20000

(Joins sheet 47)

(Joins sheet 41)

(Joins sheet 55)

680 000 FEET

570 000 FEET

560 000 FEET

660 000 FEET

WALDO COUNTY

Meadow Brook

Meadow Brook

West Branch

Sheepscot River

Deer Hill

Wood's Mills

GRAVEL PIT

G.P.

Lk

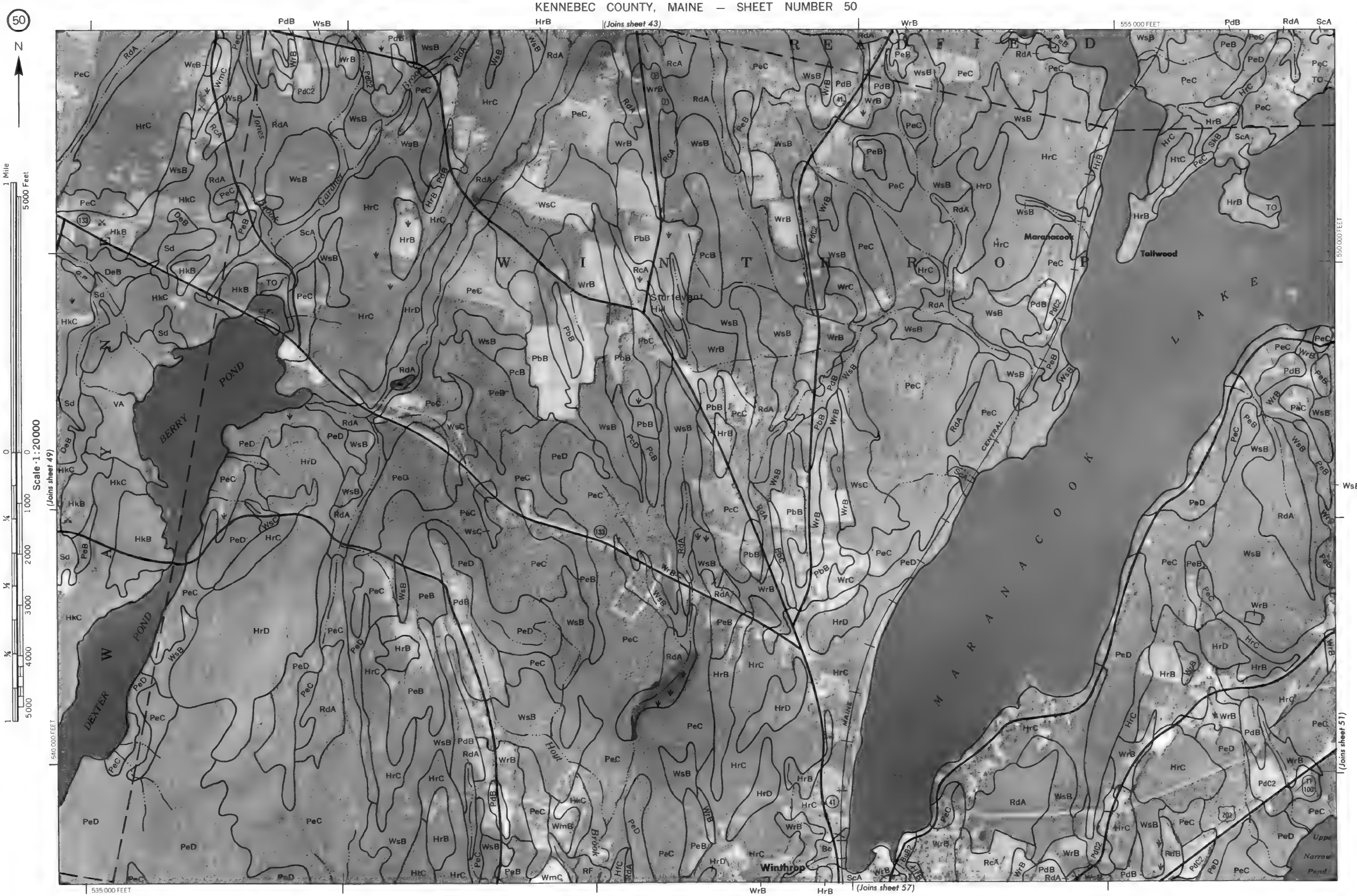
KENNEBEC COUNTY, MAINE NO. 48

This map was compiled on 1974 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners if shown are approximately positioned

KENNEBEC COUNTY, MAINE NO. 49

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE — SHEET NUMBER 50



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 50

KENNEBEC COUNTY, MAINE NO. 51

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE — SHEET NUMBER 53

53

N

610 000 FEET

630 000 FEET

650 000 FEET

540 000 FEET

(Joins sheet 46)

(Joins sheet 52)

(Joins sheet 54)

(Joins sheet 60)

TOGUS POND

TOLMAN POND

DAM POND

MADE LAND

Bolton Hill

Rides Brook

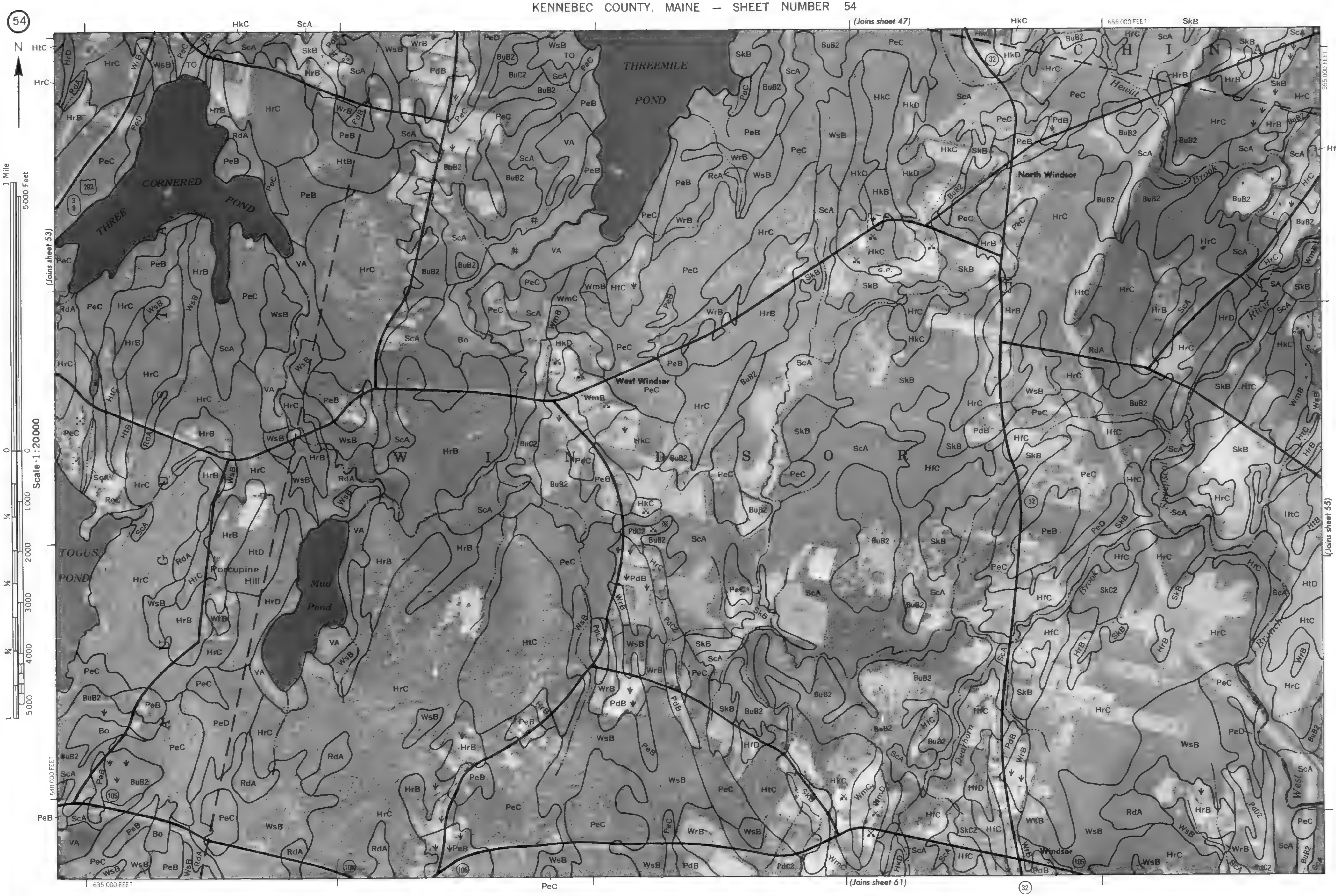
Scale 1:20000

1 Mile

5000 Feet

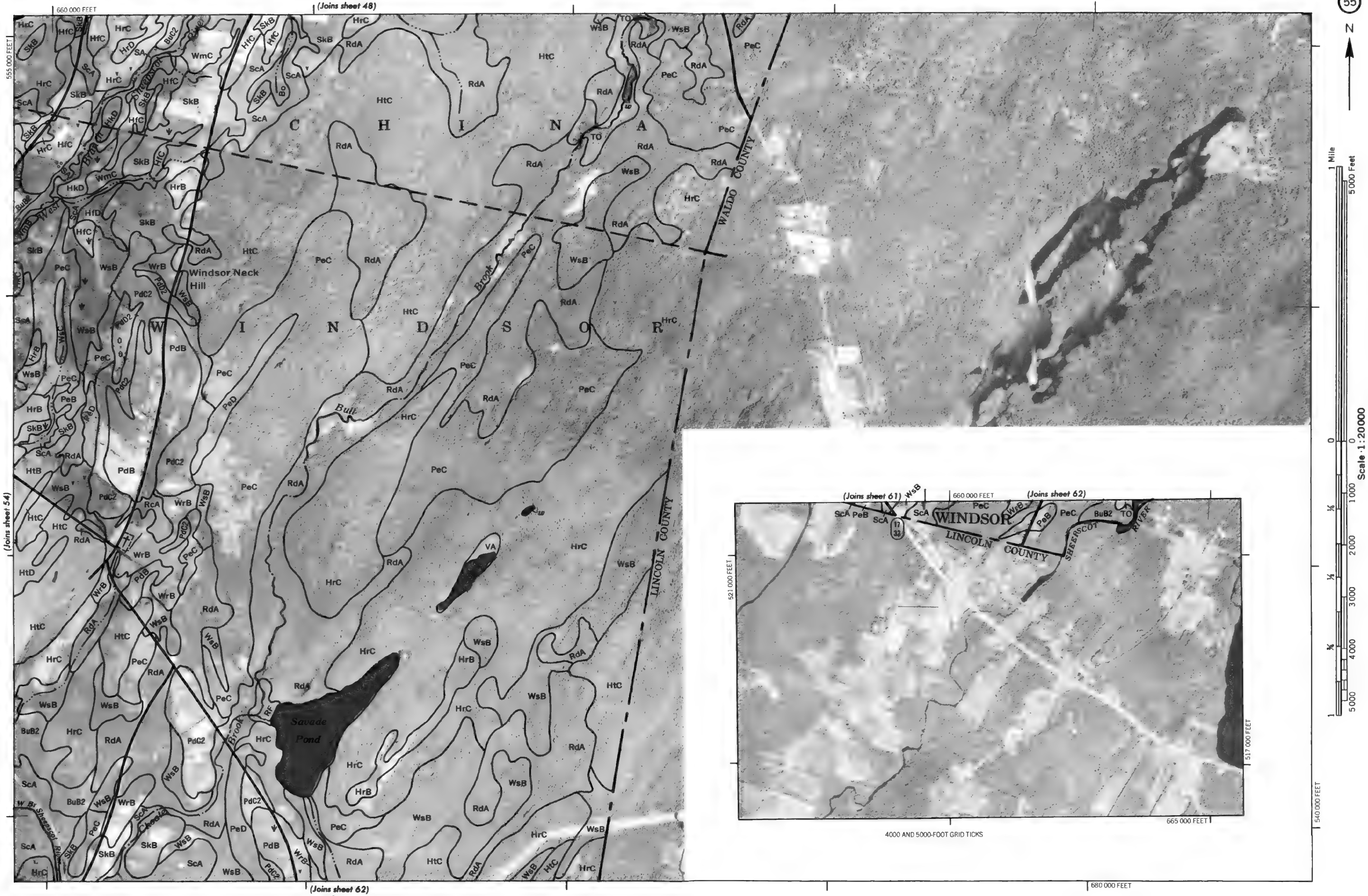
KENNEBEC COUNTY, MAINE NO. 53

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



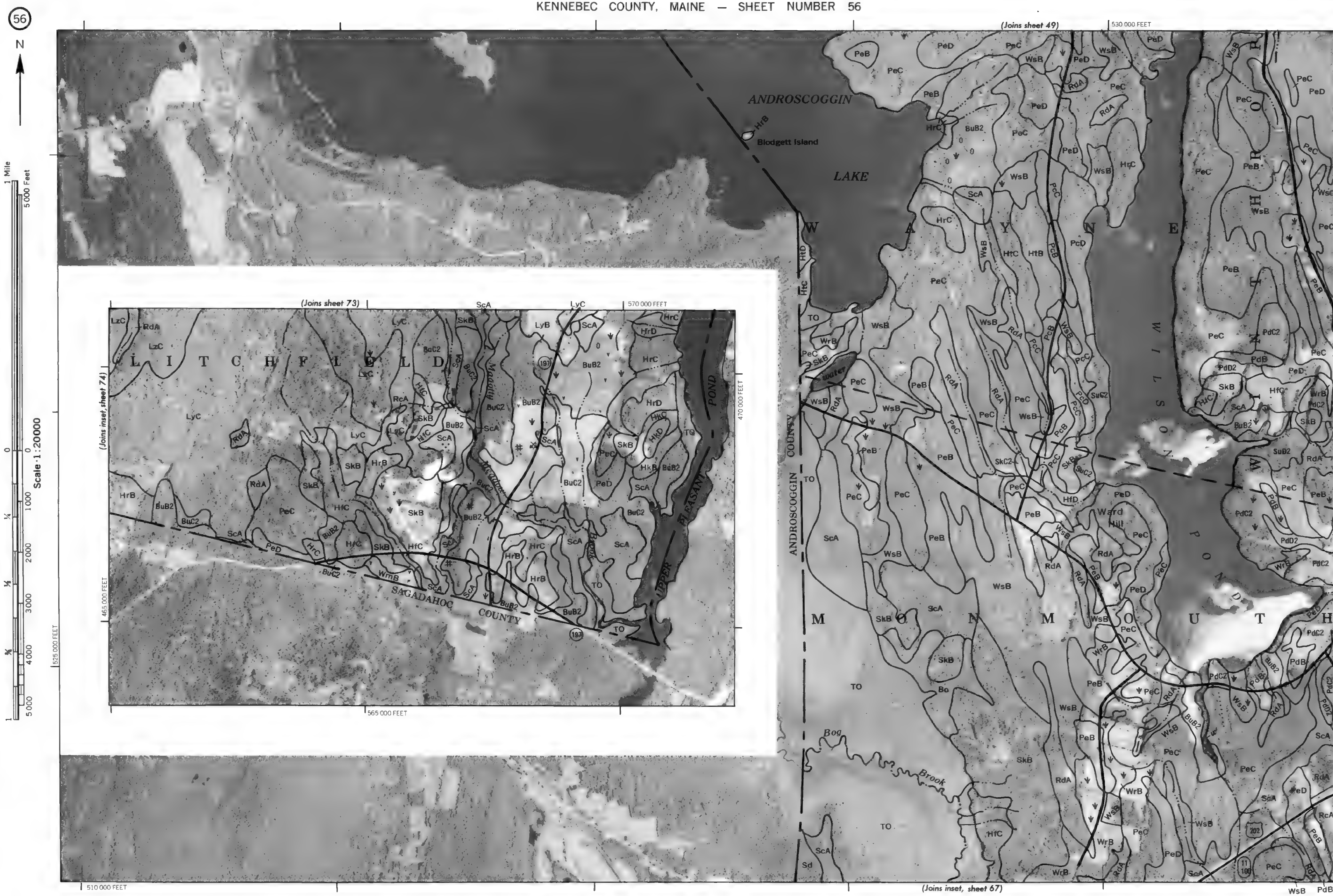
This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 54



KENNEBEC COUNTY, MAINE NO. 55

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 57

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

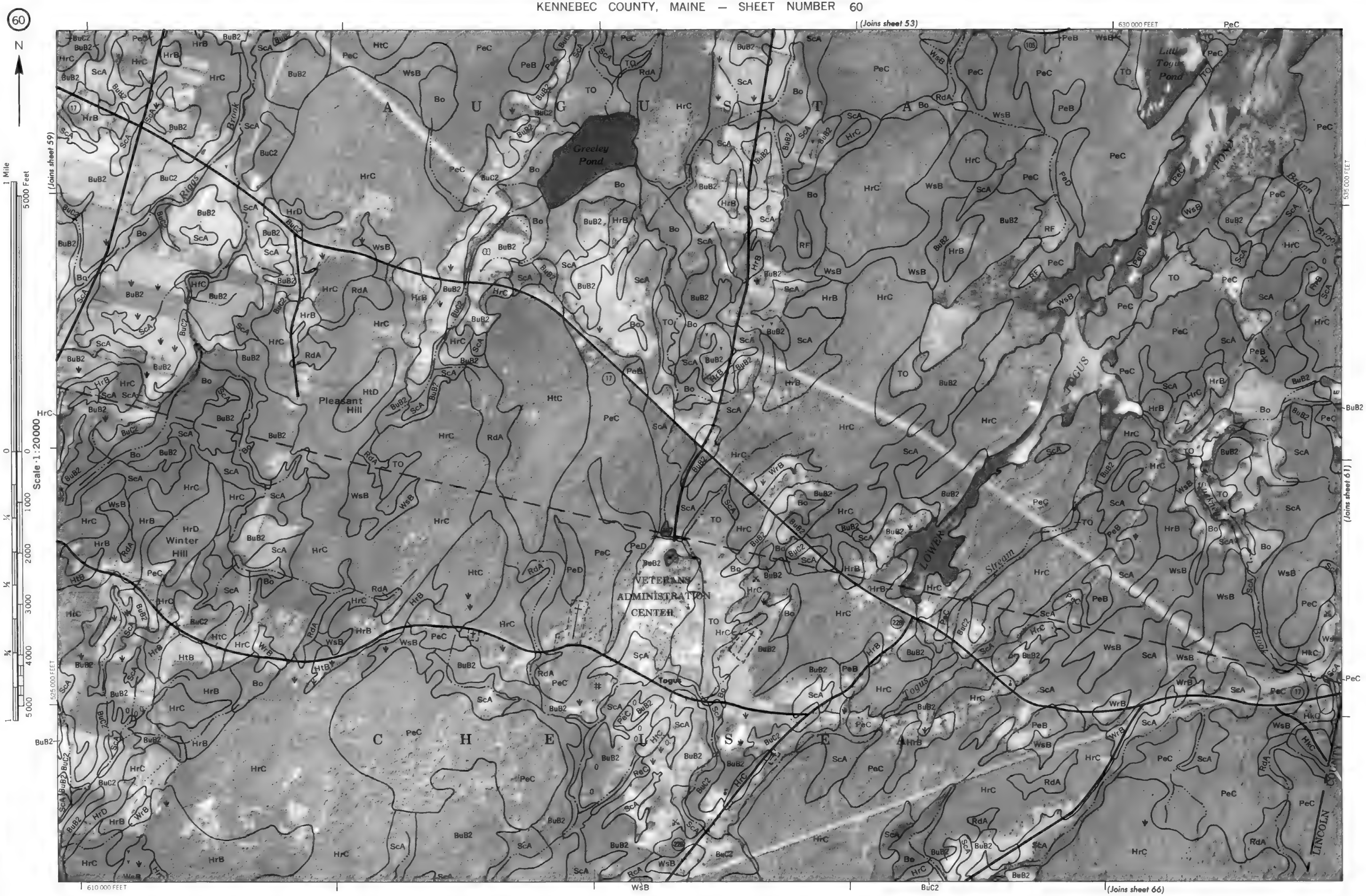
KENNEBEC COUNTY, MAINE — SHEET NUMBER 58

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 58

KENNEBEC COUNTY, MAINE NO. 59

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 60

KENNEBEC COUNTY, MAINE — SHEET NUMBER 61

61

N

635 000 FEET

535 000 FEET

525 000 FEET

655 000 FEET

(Joins sheet 54)

(Joins sheet 60)

(Joins sheet 62)

(Joins inset, sheet 55)

KENNEBEC COUNTY, MAINE NO. 61

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately ±40 meters.

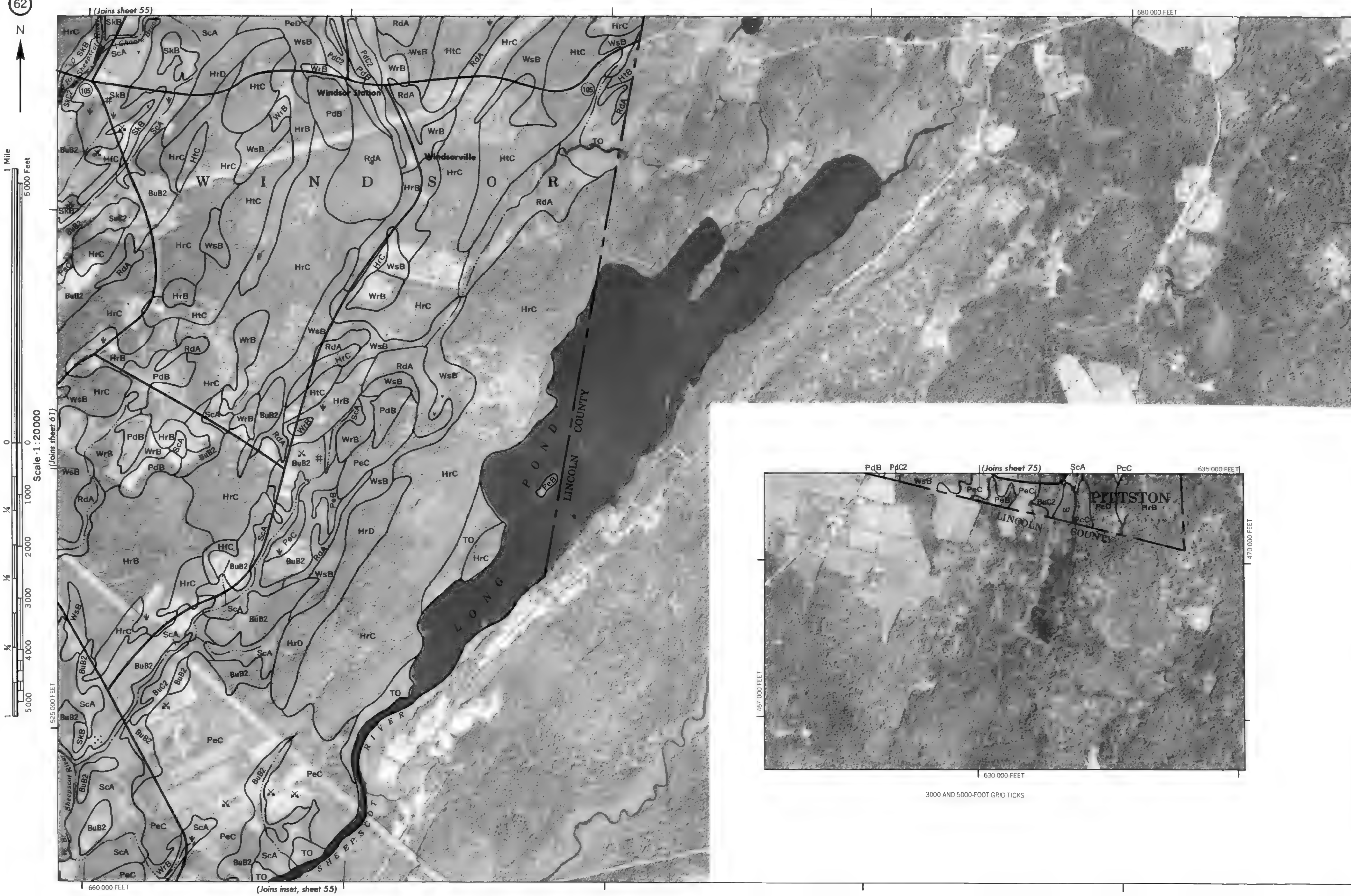
Scale 1:20000

1 Mile

5000 Feet

0 1000 2000 3000 4000 5000

0 ¼ ½ ¾ 1



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners, if shown, are approximately positioned

KENNEBEC COUNTY, MAINE NO. 62

KENNEBEC COUNTY, MAINE — SHEET NUMBER 63

63

N

KENNEBEC COUNTY, MAINE NO. 63

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

535 000 FEET

520 000 FEET

555 000 FEET

505 000 FEET

(Joins sheet 57)

(Joins inset, sheet 67)

(Joins sheet 64)

(Joins sheet 68)

LAKE ANNABESSACOOK

MONMOUTH

COBBOSSEECONTEE LAKE

WEST GARDINER

Big Island

Lovers Island

Grape Island

Pine Island

Merrill Island

Norris Island

Norris Point

Scott Island

Maple Ridge Island

Sheep Island

Ballad Bay

Undine Bay

True Cove

Jug Stream

Wilson Stream

Mills Stream

Gravel Pit

East Monmouth

Prescott Hill

Sawyer Hill

1 Mile

5000 Feet

Scale 1:20000

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE — SHEET NUMBER 65

65

N

585 000 FEET

520 000 FEET

(Joins sheet 59)

(Joins sheet 64)

(Joins sheet 66)

(Joins sheet 70)

605 000 FEET

505 000 FEET

WEST GARDINER

GARDINER

RANDOLPH

PITTSTON

Farmingdale

Browns Island

HALLOWELL

KENNEBEC RIVER

Togus Stream

Water

MAINE TURNPIKE

1 Mile

5000 Feet

Scale 1:20000

KENNEBEC COUNTY, MAINE NO. 65

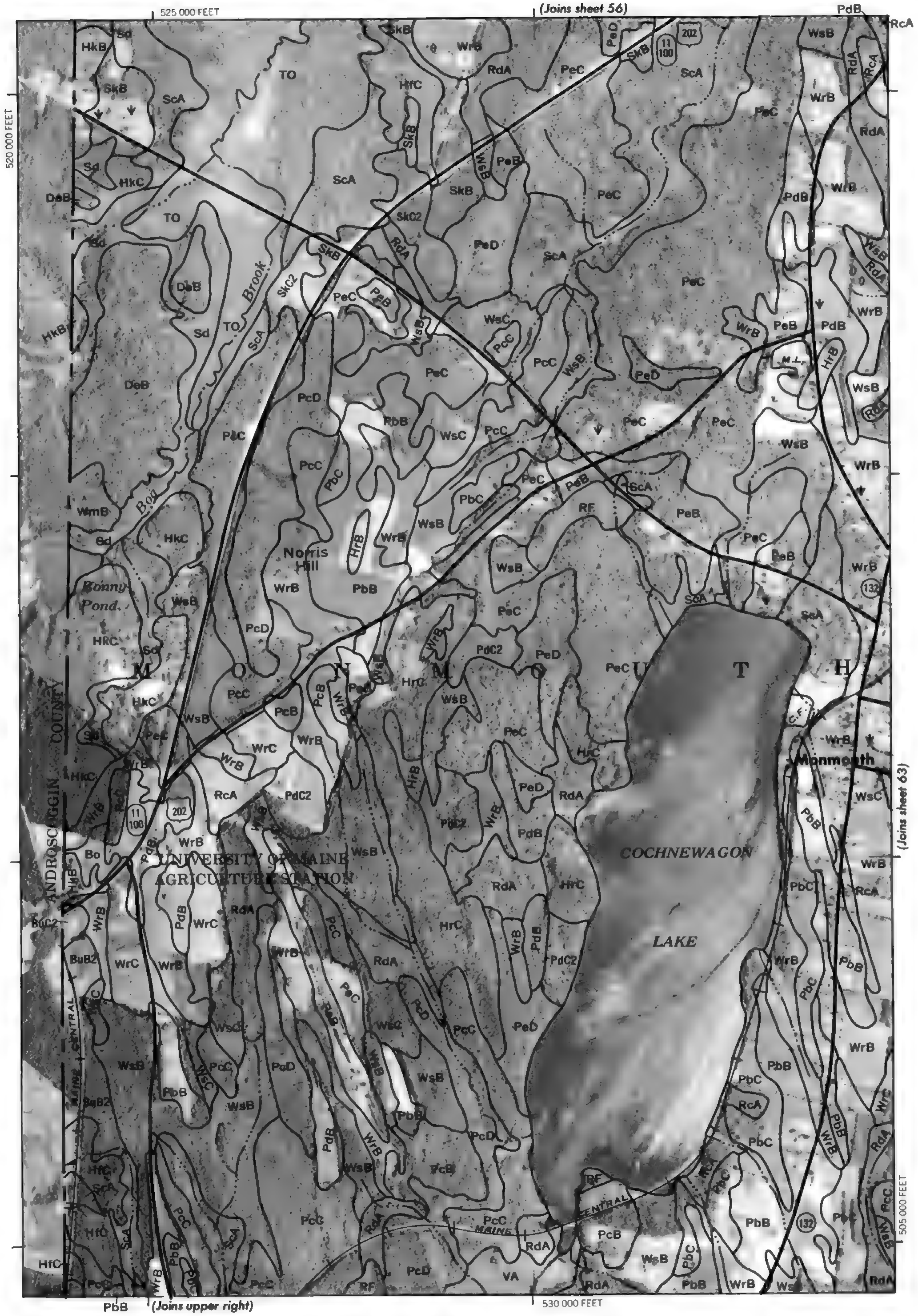
This map is compiled on 1974 aerial photography by the U S Department of Agriculture Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners if shown, are approximate y positioned

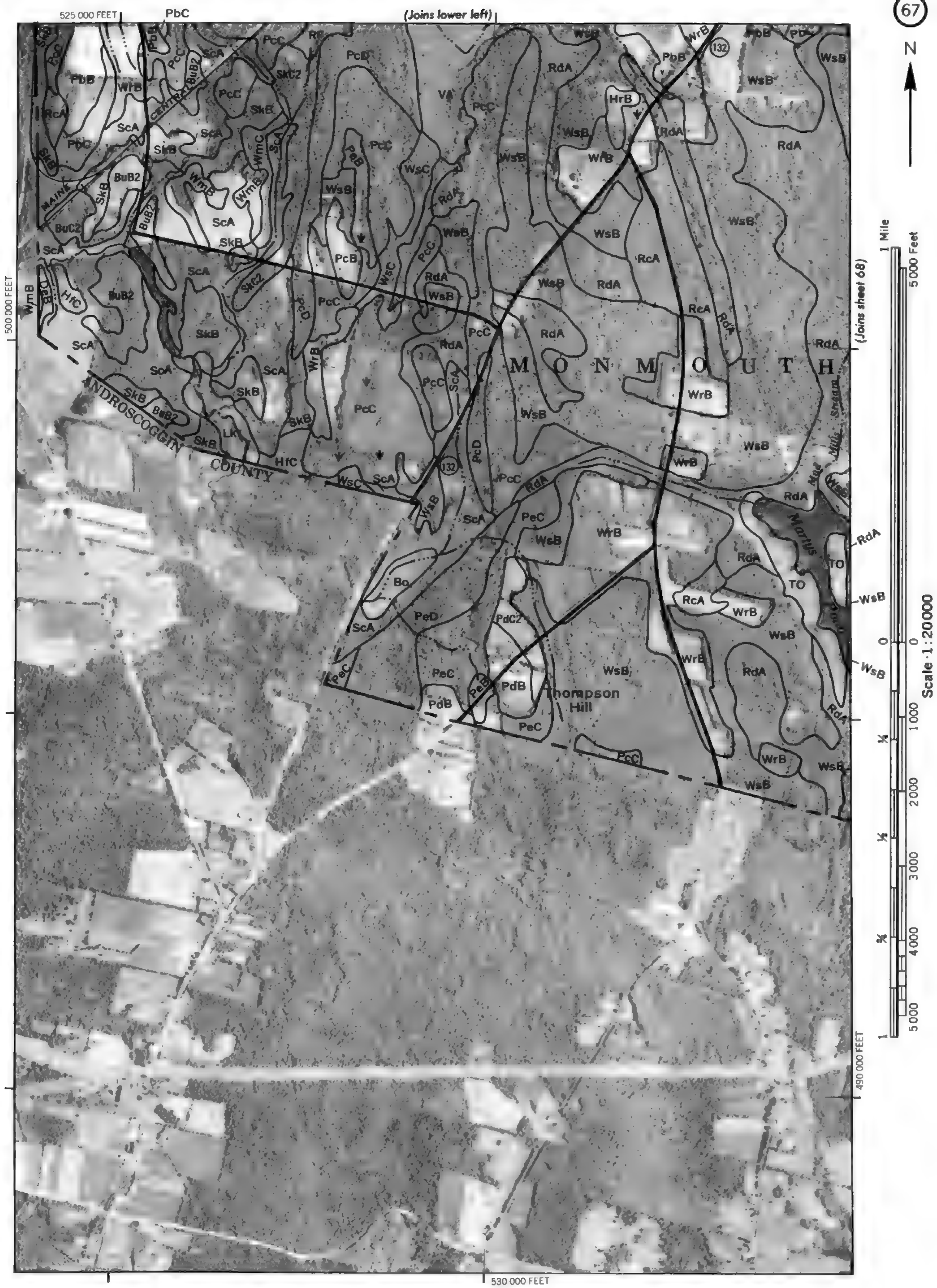
KENNEBEC COUNTY, MAINE — SHEET NUMBER 66

This map is compiled on 1974 aerial photography by U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 67

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.





KENNEBEC COUNTY, MAINE — SHEET NUMBER 68

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 68

KENNEBEC COUNTY, MAINE — SHEET NUMBER 69

69

N

560 000 FEET

500 000 FEET

490 000 FEET

580 000 FEET

(Joins sheet 64)

(Joins sheet 68)

(Joins sheet 70)

(Joins sheet 73)

Litchfield

Batcheldors Crossing

Dennis Hill

Lunts Hill

Spears Corner

Woodbury Pond

Horseshoe Pond

Brook

Dennis

COBBOSSEECONTEE STREAM

COLD STREAM

TURNPIKE

MAINE

GARDINER

WEST GARDINER

LITCHFIELD

1 Mile

5000 Feet

Scale 1:20000

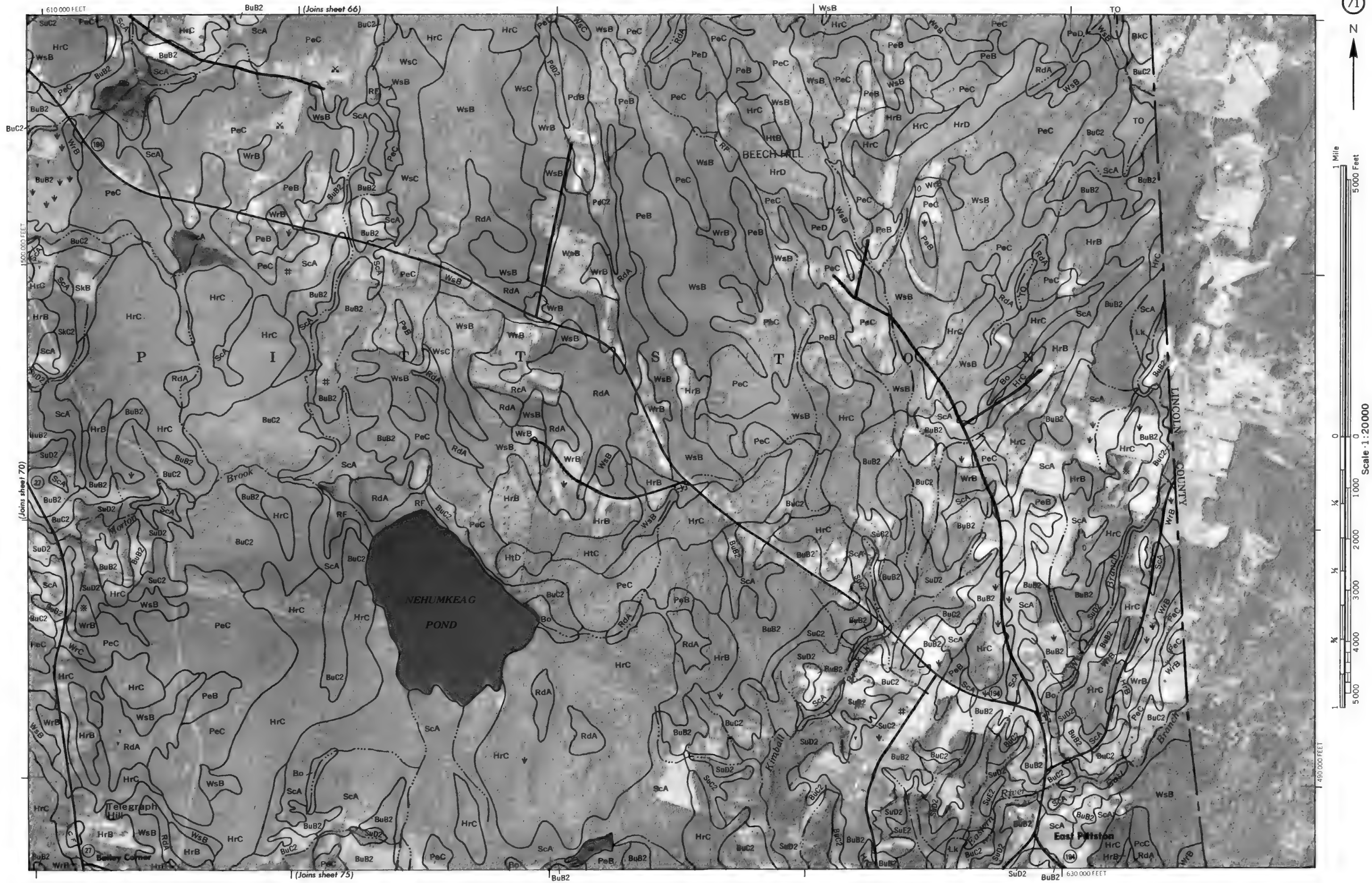
KENNEBEC COUNTY, MAINE NO. 69

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners (if shown) are approximately positioned

KENNEBEC COUNTY, MAINE — SHEET NUMBER 70

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 70



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE — SHEET NUMBER 72

72

N

1 Mile

5000 Feet

Scale 1:20000

(Joins sheet 68)

555 000 FEET

485 000 FEET

475 000 FEET

535 000 FEET

(Joins sheet 73)

(Joins inset, sheet 74)

ANDROSCOGGIN COUNTY

KENNEBEC COUNTY

Buker Pond

Jimmy Pond

Loon Pond

Danforth Hill

Springer Hill

Litchfield Corners

Ashford Brook

TURNPIKE

MAINE

GRAVEL PIT

C.F.

G.P.

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

MAINE NO. 72

KENNEBEC COUNTY, MAINE — SHEET NUMBER 73

KENNEBEC COUNTY, MAINE NO. 73

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

560 000 FEET

580 000 FEET

485 000 FEET

475 000 FEET

(Joins sheet 69)

(Joins sheet 74)

(Joins sheet 72)

(Joins inset, sheet 56)

73

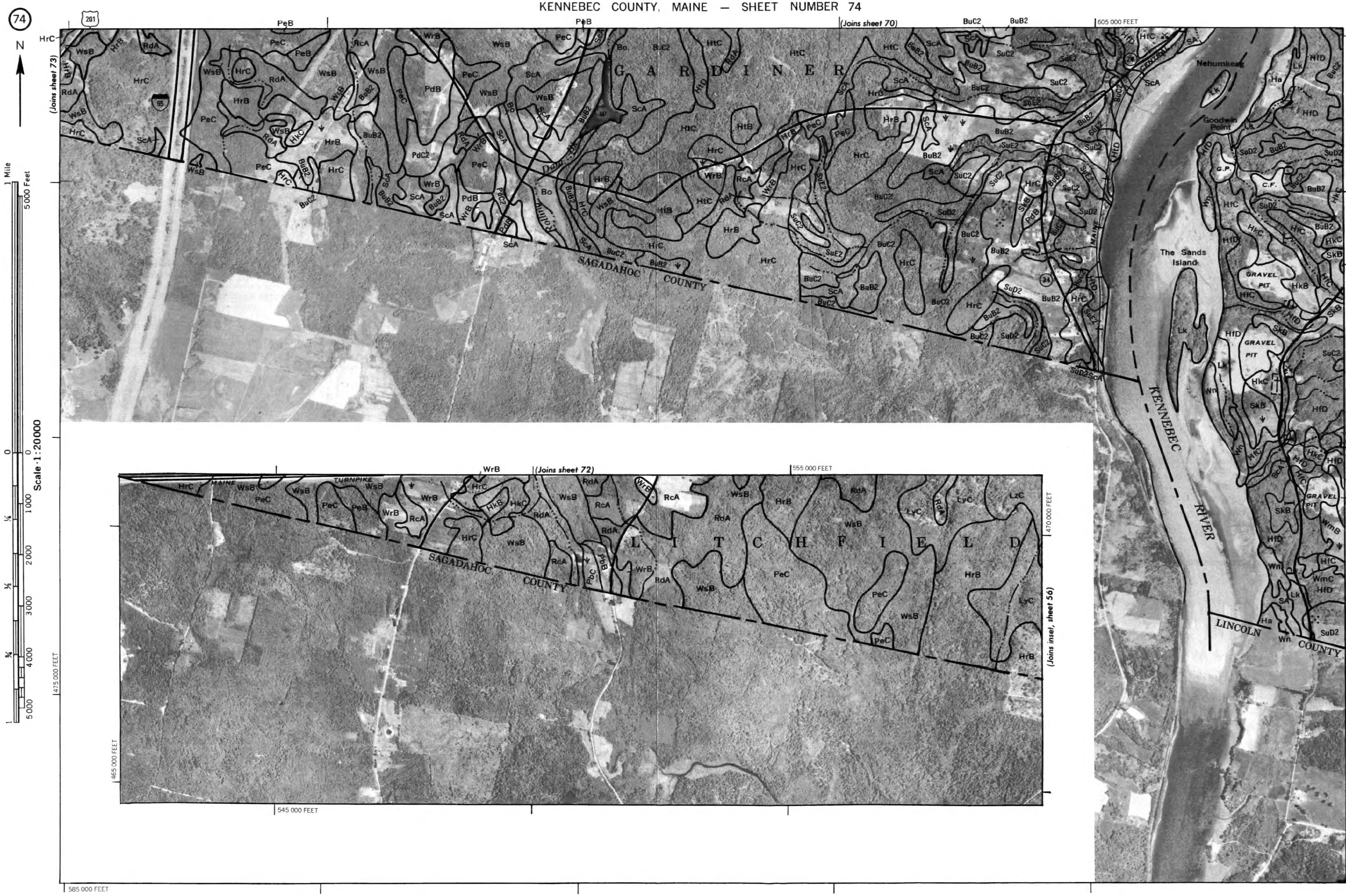
N

1 Mile

5000 Feet

Scale 1:20000

KENNEBEC COUNTY, MAINE — SHEET NUMBER 74



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KENNEBEC COUNTY, MAINE NO. 74

KENNEBEC COUNTY, MAINE — SHEET NUMBER 75

75

N

KENNEBEC COUNTY, MAINE NO. 75

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture. Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

610 000 FEET

485 000 FEET

475 000 FEET

635 000 FEET

(Joins sheet 74)

(Joins sheet 71)

(Joins inset, sheet 62)

PITTSTON

LINCOLN COUNTY

KENNEBEC COUNTY

EASTERN RIVER

Kimball Brook

Palmer Brook

Scale 1:20000

1 Mile

5000 Feet